GARDNER ON THOMAS GOLD | NICKELL ON BROWN'S *LOST SYMBOL* | SHROUD OF TURIN DUPLICATED

Skeptical Inquirer

THE MAGAZINE FOR SCIENCE AND REASON
Volume 34, No. 1 • January / February 2010 • INTRODUCTORY PRICE U.S. and Canada $4.95

THE WAR ON CANCER
A PROGRESS REPORT FOR SKEPTICS

How Parapsychologists Nullify Null Results

Fringe Medicine's 'Causes' Claims

ID's Wedge Strategy: An Update

Stephen Fry Interview: Last Chance to Think

Coral Castle: Fact and Folklore

Published by the Committee for Skeptical Inquiry

0 71486 02614 3

Committee for Skeptical Inquiry

FORMERLY THE COMMITTEE FOR THE SCIENTIFIC INVESTIGATION OF CLAIMS OF THE PARANORMAL (CSICOP)
AT THE CENTER FOR INQUIRY/TRANSNATIONAL

An International Organization

Paul Kurtz, Founder and Chairman Emeritus
Richard Schroeder, Chairman
Ronald A. Lindsay, President and CEO
Barry Karr, Executive Director
Richard Wiseman, Research Fellow
Joe Nickell, Senior Research Fellow
Massimo Polidoro, Research Fellow

Committee for Skeptical Inquiry

Fellows

James E. Alcock, psychologist, York Univ., Toronto
Marcia Angell, M.D., former editor-in-chief, *New England Journal of Medicine*
Stephen Barrett, M.D., psychiatrist, author, consumer advocate, Allentown, Pa.
Willem Betz, professor of medicine, Univ. of Brussels
Irving Biederman, psychologist, Univ. of Southern California
Susan Blackmore, Visiting Lecturer, Univ. of the West of England, Bristol
Henri Broch, physicist, Univ. of Nice, France
Jan Harold Brunvand, folklorist, professor emeritus of English, Univ. of Utah
Mario Bunge, philosopher, McGill University
Sean B. Carroll, professor of molecular genetics, Univ. of Wisconsin–Madison
John R. Cole, anthropologist, editor, National Center for Science Education
Frederick Crews, literary and cultural critic, professor emeritus of English, Univ. of California, Berkeley
Richard Dawkins, zoologist, Oxford Univ.
Geoffrey Dean, technical editor, Perth, Australia
Cornelis de Jager, professor of astrophysics, Univ. of Utrecht, the Netherlands
Daniel C. Dennett, university professor and Austin B. Fletcher Professor of Philosophy, director of Center for Cognitive Studies at Tufts Univ.
Ann Druyan, writer and producer, and CEO, Cosmos Studios, Ithaca, New York
Kenneth Feder, professor of anthropology, Central Connecticut State Univ.
Antony Flew, philosopher, Reading Univ., U.K.
Barbara Forrest, professor of philosophy, Southeastern Louisiana Univ.
Andrew Fraknoi, astronomer, Foothill College, Los Altos Hills, Calif.
Kendrick Frazier*, science writer, editor, SKEPTICAL INQUIRER
Yves Galifret, executive secretary, l'Union Rationaliste
Martin Gardner, author, critic
Murray Gell-Mann, professor of physics, Santa Fe Institute; Nobel laureate
Thomas Gilovich, psychologist, Cornell Univ.
Susan Haack, Cooper Senior Scholar in Arts and Sciences, professor of philosophy and professor of Law, University of Miami
C.E.M. Hansel, psychologist, Univ. of Wales
David J. Helfand, professor of astronomy, Columbia Univ.
Douglas R. Hofstadter, professor of human understanding and cognitive science, Indiana Univ.
Gerald Holton, Mallinckrodt Professor of Physics and professor of history of science, Harvard Univ.
Ray Hyman, psychologist, Univ. of Oregon
Leon Jaroff, sciences editor emeritus, *Time*
Sergei Kapitza, former editor, Russian edition, *Scientific American*
Lawrence M. Krauss, author, Foundation Professor in the School of Earth and Space Exploration and Physics Department, and Inaugural Director of the Origins Initiative at Arizona State University
Harry Kroto, professor of chemistry and biochemistry, Florida State University; Nobel laureate
Edwin C. Krupp, astronomer, director, Griffith Observatory
Paul Kurtz,* professor emeritus of philosophy, SUNY at Buffalo
Lawrence Kusche, science writer
Leon Lederman, emeritus director, Fermilab; Nobel laureate in physics
Scott Lilienfeld, psychologist, Emory Univ.
Lin Zixin, former editor, *Science and Technology Daily* (China)
Jere Lipps, Museum of Paleontology, Univ. of California, Berkeley
Elizabeth Loftus, professor of psychology, Univ. of California, Irvine
David Marks, psychologist, City University, London
Mario Mendez-Acosta, journalist and science writer, Mexico City, Mexico
Marvin Minsky, professor of media arts and sciences, M.I.T.
David Morrison, space scientist, NASA Ames Research Center
Richard A. Muller, professor of physics, Univ. of Calif., Berkeley
Joe Nickell, senior research fellow, CSI
Lee Nisbet, philosopher, Medaille College
Bill Nye, science educator and television host, Nye Labs
James E. Oberg, science writer
Irmgard Oepen, professor of medicine (retired), Marburg, Germany
Loren Pankratz, psychologist, Oregon Health Sciences Univ.
Robert L. Park, professor of physics, Univ. of Maryland
John Paulos, mathematician, Temple Univ.
Steven Pinker, cognitive scientist, Harvard
Massimo Polidoro, science writer, author, executive director CICAP, Italy
Milton Rosenberg, psychologist, Univ. of Chicago
Wallace Sampson, M.D., clinical professor of medicine, Stanford Univ., editor, *Scientific Review of Alternative Medicine*
Amardeo Sarma*, senior manager, NEC Europe Ltd.; chairman, GWUP, Germany.
Evry Schatzman, former president, French Physics Association
Eugenie Scott, physical anthropologist, executive director, National Center for Science Education
Robert Sheaffer, science writer
Elie A. Shneour, biochemist, author, president and research director, Biosystems Research Institute, La Jolla, Calif.
Dick Smith, film producer, publisher, Terrey Hills, N.S.W., Australia
Robert Steiner, magician, author, El Cerrito, Calif.
Victor J. Stenger, emeritus professor of physics and astronomy, Univ. of Hawaii; adjunct professor of philosophy, Univ. of Colorado
Jill Cornell Tarter, astronomer, SETI Institute, Mountain View, Calif.
Carol Tavris, psychologist and author, Los Angeles, Calif.
David Thomas, physicist and mathematician, Peralta, New Mexico
Stephen Toulmin, professor of philosophy, Univ. of Southern California
Neil deGrasse Tyson, astrophysicist and director, Hayden Planetarium, New York City
Marilyn vos Savant, *Parade* magazine contributing editor
Steven Weinberg, professor of physics and astronomy, Univ. of Texas at Austin; Nobel laureate
E.O. Wilson, university professor emeritus, Harvard University
Richard Wiseman, psychologist, University of Hertfordshire
Benjamin Wolozin*, professor, department of pharmacology, Boston University School of Medicine
Marvin Zelen, statistician, Harvard Univ.

* Member, CSI Executive Council
(Affiliations given for identification only.)

Visit the CSI Web site at www.csicop.org

The SKEPTICAL INQUIRER (ISSN 0194-6730) is published bimonthly by the Committee for Skeptical Inquiry, 3965 Rensch Road, Amherst, NY 14228. Printed in U.S.A. Periodicals postage paid at Buffalo, NY, and at additional mailing offices. Subscription prices: one year (six issues), $35; two years, $60; three years, $84; single issue, $4.95. Canadian and foreign orders: Payment in U.S. funds drawn on a U.S. bank must accompany orders; please add US$10 per year for shipping. Canadian and foreign customers are encouraged to use Visa or MasterCard. Canada Publications Mail Agreement No. 41153509. Return undeliverable Canadian addresses to: IMEX, P.O. Box 4332, Station Rd., Toronto, ON M5W 3J4.

Inquiries from the media and the public about the work of the Committee should be made to Barry Karr, Executive Director, CSI, P.O. Box 703, Amherst, NY 14226-0703. Tel.: 716-636-1425. Fax: 716-636-1733.

Manuscripts, letters, books for review, and editorial inquiries should be addressed to Kendrick Frazier, Editor, SKEPTICAL INQUIRER, 944 Deer Drive NE, Albuquerque, NM 87122. Fax: 505-828-2080. Before submitting any manuscript, please consult our Guide for Authors for format, references, and submittal requirements. It is on our Web site at www.csicop.org/si/guide-for-authors.html and on page 56 of the March/April 2008 issue. Or you may send a fax request to the editor.

Articles, reports, reviews, and letters published in the SKEPTICAL INQUIRER represent the views and work of individual authors. Their publication does not necessarily constitute an endorsement by CSI or its members unless so stated.

Copyright ©2009 by the Committee for Skeptical Inquiry. All rights reserved. The SKEPTICAL INQUIRER is available on 16mm microfilm, 35mm microfilm, and 105mm microfiche from University Microfilms International and is indexed in the Reader's Guide to Periodical Literature.

Subscriptions and changes of address should be addressed to: SKEPTICAL INQUIRER, P.O. Box 703, Amherst, NY 14226-0703. Or call toll-free 1-800-634-1610 (outside the U.S. call 716-636-1425). Old address as well as new are necessary for change of subscriber's address, with six weeks advance notice. SKEPTICAL INQUIRER subscribers may not speak on behalf of CSI or the SKEPTICAL INQUIRER.

Postmaster: Send changes of address to SKEPTICAL INQUIRER, P.O. Box 703, Amherst, NY 14226-0703.

Skeptical Inquirer

January / February 2010 • Vol. 34, No. 1

ARTICLES

25 **The War on Cancer: A Progress Report for Skeptics**

Although there has been some progress in the war on cancer initiated by President Nixon in 1971, the gains have been limited.

REYNOLD SPECTOR

COMMENT: AN ONCOLOGIST'S VIEW FROM THE TRENCHES

FA-CHYI LEE

33 **The One True Cause of All Disease**

Alternative practitioners constantly claim that conventional medicine treats only symptoms while they treat underlying causes. They've got it backwards.

HARRIET HALL

36 **'Heads I Win, Tails You Lose'**
How Parapsychologists Nullify Null Results

Parapsychologists have tended to view positive results as supportive of the psi hypothesis while ensuring that null results don't count as evidence against it. Here's how this self-deceptive process works and four suggestions to overcome it.

RICHARD WISEMAN

40 **Wedge Strategy Update**
Intelligent Design Creationism Since the Dover Trial

The creationist havens of Louisiana and Texas are doing all they can—which is considerable— to flout the law and inject intelligent design into public schools.

BARBARA FORREST

46 **Stephen Fry —Last Chance to Think**

KYLIE STURGESS

49 **Coral Castle**
Fact and Folklore

KAREN STOLLZNOW

54 **Religious Fundamentalism and Same-Sex Marriage**

ANTHONY LAYNG

CONFERENCE REPORT

8 **CSI's 'UFOs: The Space-Age Mythology'**

DAVE THOMAS

COLUMNS

EDITOR'S NOTE
The Scourge of Cancer 4

NEWS AND COMMENT
Notes on the News: Deception, Notoriety, and Credulity in Our Infotainment Age / Cryptozoology Museum Opens in Maine / Chupacabra Part of Creationist Exhibit 5

INVESTIGATIVE FILES
Belgian Miracles
JOE NICKELL 12

NOTES OF A FRINGE WATCHER
Thomas Gold: Is the Origin of Oil Nonbiological?
MARTIN GARDNER 16

NOTES ON A STRANGE WORLD
The Shroud of Turin Duplicated
MASSIMO POLIDORO 18

THINKING ABOUT SCIENCE
Is There a Difference between Basic and Applied Science?
MASSIMO PIGLIUCCI 19

PSYCHIC VIBRATIONS
NASA Tries to Bomb Star Visitors
ROBERT SHEAFFER 21

THE SKEPTICAL INQUIREE
Hyperbaric Therapy for Autism: Airy Promises
BENJAMIN RADFORD 24

FOLLOW-UP
When Does a Person Become a Human Subject?
MARY M. LIVINGSTON AND JEROME J. TOBACYK 56

Assessing the Credibility of CFI's Credibility Project
GARY P. POSNER 57

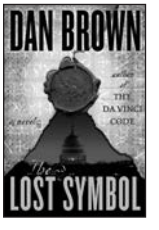
Response to 'Assessing the Credibility of CFI's Credibility Project'
STUART JORDAN 59

LETTERS TO THE EDITOR 62

THE LAST LAUGH 66

BOOK REVIEW

The Lost Symbol
Dan Brown
JOE NICKELL 60



Editor's Note

The Scourge of Cancer

I doubt there are many families not affected in some way by the subject of our cover article—cancer. In "The War on Cancer: A Progress Report for Skeptics," Dr. Reynold Spector, clinical professor at the Robert Wood Johnson Medical School in New Jersey, gives a sober assessment of the progress—in some cases, the lack of progress—we've seen against this terrible set of diseases. Some notable gains have been made, for which we are all grateful. With other cancers, advances are difficult to discern. I think it is a valuable article—evidence-based, nuanced, calm, and reasoned.

Several years back, *The New York Times* ran a front-page article after a cancer-research meeting reporting that cancer was close to becoming a chronic, treatable disease. That sounded wonderful. Then in three noteworthy 2009 articles, respected *New York Times* medical writer Gina Kolata delved deeply into the statistics and found much less reason for such optimism. In his article this issue, Spector, using tables and charts of data, finds some recent progress but overall reinforces Kolata's view.

Biomedical scientists, cancer researchers, oncologists, surgeons, pharmaceutical researchers, nurses, and techs have fought valiantly to diminish the suffering cancer brings. I have deep admiration for them. I myself am alive due to their efforts. As friends and colleagues know, starting in 1999 I battled colorectal cancer (treated first by surgery, then chemo and radiation). It returned in late 2003 as metastasized colorectal cancer in the lung. My prognosis was poor. But with two lung surgeries, more chemotherapy and anti-inflammatory drugs, plus the then brand new (five weeks after FDA approval) genetically engineered drug Avastin (subject of a critical section in Spector's article), I have been tumor free (one can never say cancer free) and fit since late 2005. What part of that combination of treatments was most responsible, I can't say. But I am grateful. And very fortunate.

But cancer has a way of forcing its way on us. As this issue neared layout, our daughter, still helping raise three children, was struck by another form of invasive cancer, and it has apparently also entered the lymph nodes. She had major surgery four days ago as I write, and she now faces chemo, radiation, and a formidable battle. Families encounter such diagnoses every day, everywhere. What a scourge is cancer!

One cancer physician with whom I shared our cover article, a longtime CSI fellow, called it very good but said we should note that cancer deaths increase with longevity (more chance to develop cancer) and as the proportion of cardiovascular/stroke deaths decrease. He also noted that the questions, conflicts, biases, stats, and cost-benefit issues Dr. Spector raises are on the minds of oncologists, other physicians, insurance reviewers (also physicians), and economists all the time. They struggle with these matters daily. I invited one such oncologist to comment at the end of the article. We welcome the perspectives and input of other cancer researchers, oncologists, medical policymakers, and physicians—and of course patients and readers. Perhaps this can be the beginning of a constructive forum.

* * *

Other articles in this issue range over topics more typical for us—alternative practitioners' strange assertions, parapsychologists' rationalizations, creationists' latest tactics, fact and folklore about the so-called Coral Castle in Flordia, and an interview with actor/writer/skeptic Stephen Fry.

—Kendrick Frazier

Skeptical Inquirer™
THE MAGAZINE FOR SCIENCE AND REASON

EDITOR
Kendrick Frazier

EDITORIAL BOARD
James E. Alcock
Thomas Casten
Martin Gardner
Ray Hyman
Paul Kurtz
Joe Nickell
Amardeo Sarma
Benjamin Wolozin

CONSULTING EDITORS
Susan J. Blackmore
Kenneth L. Feder
Barry Karr
E. C. Krupp
Scott O. Lilienfeld
David F. Marks
Jay M. Pasachoff
Eugenie Scott
Richard Wiseman

CONTRIBUTING EDITORS
Austin Dacey
Harriet Hall
Kenneth W. Krause
Chris Mooney
James E. Oberg
Robert Sheaffer
David E. Thomas

MANAGING EDITOR
Benjamin Radford

ART DIRECTOR
Christopher Fix

PRODUCTION
Paul Loynes

ASSISTANT EDITORS
Julia Lavarnway
Gingle C. Lee

CARTOONIST
Rob Pudim

WEB DEVELOPER
C. Alan Zoppa

PUBLISHER'S REPRESENTATIVE
Barry Karr

CORPORATE COUNSEL
Brenton N. VerPloeg

BUSINESS MANAGER
Matthew Cravatta

FISCAL OFFICER
Paul Paulin

VICE PRESIDENT OF PLANNING AND DEVELOPMENT
Sherry Rook

DATA OFFICER
Jacalyn Mohr

STAFF
Patricia Beauchamp
Cheryl Catania
Roe Giambrone
Leah Gordon
Sandy Kujawa
Anthony Santa Lucia
John Sullivan
Vance Vigrass

PUBLIC RELATIONS
Nathan Bupp
Henry Huber

INQUIRY MEDIA PRODUCTIONS
Thomas Flynn

DIRECTOR OF LIBRARIES
Timothy S. Binga

The Skeptical Inquirer is the official journal of the Committee for Skeptical Inquiry, an international organization.

COMMITTEE FOR SKEPTICAL INQUIRY
"…promotes science and scientific inquiry, critical thinking, science education, and the use of reason in examining important issues."

Notes on the News: Deception, Notoriety, and Credulity in Our Infotainment Age

KENDRICK FRAZIER

The media frenzy about a homemade balloon launch supposedly carrying a Fort Collins, Colorado, family's six-year-old son into the sky and the resulting revelation that it was (surprise!) all a hoax illustrate what has gone wrong with modern television infotainment. How such a trivial event could have become a worldwide media extravaganza tells us a lot about the symbiotic relationship between television and the deceivers, prevaricators, and celebrity-seekers among us. The reality show mentality has so permeated culture that truth and "real" reality too often take a secondary, at best, position. Television loves such stuff—it just can't seem to resist—and TV stations and networks increasingly fall victim to pranks and hoaxes that play to that fact.

Such a flimsy balloon couldn't have carried much of anything, let alone a thirty-seven-pound boy, yet there it was, shown on live TV (in footage that was repeated endlessly over the following days). Suspicions did arise rather quickly when it turned out Richard Heene, the boy's father, had called a local television station before calling 911. And the red flags really went up when it was reported that Heene and his family had already appeared on the ABC reality show *Wife Swap*. Then (surprise, surprise!) it was revealed that the incident was all a hoax concocted to land another reality TV show for the family. A Denver associate of Heene told authorities Heene had told him earlier he was planning a media stunt to shop a proposed reality series billed as "*Mythbusters*-meet-mad scientist." It called for release of a flying-saucer-shaped balloon to gain attention for the Heene family, the proposed show, and UFOs.

Most likely none of this would have occurred if not for the way human venality is encouraged by the new genre of television shows that seek sensation and blur all the lines between fiction and reality. In fact, as I write, investigators are examining the possibility that other conspirators might include a media outlet, described by a Larimer County deputy sheriff as one that blurs "the line between entertainment and news," which had supposedly agreed to pay money to the Heenes regarding the balloon incident. Whether or not the proposed reality show has been called off (as some reports indicated), or whether threatened legal charges are in fact pursued to the end, the Heenes achieved new levels of celebrity and notoriety. These days, that combination is a bankable commodity. With the complicity of any of the nearly endless array of cable TV outlets seeking something to fill airtime, we should not be surprised if the family is still able to cash in.

Photo: Newscom

Richard Heene speaks with media in front of his home in Fort Collins, Colorado, on Saturday, October 17, 2009.

* * *

The bizarreness quotient ratcheted up even more when a connection to another crazy current of contemporary pseudoscience surfaced.

A lawyer for Heene's Denver associate revealed that "Heene believes the world is going to end in 2012. Because of that, he wanted to make money quickly, become rich enough to build a bunker or something underground, where he can be safe from the sun exploding."

* * *

An almost amusing sidelight in the media coverage was ABC *Good Morning America*'s October 19 guest to comment about the balloon-hoax incident. The guest was Clifford Irving, himself the promulgator of one of the most widely known publicity hoaxes ever engineered. Irving hoaxed his publisher McGraw-Hill and the American public in the early 1970s by asserting unreservedly that reclusive, idiosyncratic industrialist Howard Hughes had given Irving exclusive rights to his biography. None of it was true. Irving served time in prison for that hoax (which became the subject of a pretty good 2007 film starring Richard Gere as Irving). As for the Heenes, Irving predictably tried to minimize the deleterious effects of their balloon hoax, saying it provided entertainment to the public and "nobody got hurt." The time and expense local agencies spent searching for the boy and dealing with the matter don't count, apparently. Irving, also

Court Vindicates Doctor Skeptical of Prayer Study

A defamation lawsuit against Bruce Flamm, a physician challenging a fertility prayer study, has been dismissed.

To read this story, visit **www.csicop.org/SIExtras.**

quite predictably, concluded his segment by outrageously hawking his own forthcoming screenplay. The thriving symbiosis between television and tainted celebrities was never so starkly illustrated.

* * *

With widespread concerns about the H1N1 virus and the availability of vaccinations against it this flu season, it is not surprising that flu vaccine scams have emerged. They include an ultraviolet light that will "destroy swine flu virus," a dietary supplement claiming to be "more effective than a swine flu shot," pills, filters, and hundreds of other bogus swine flu deterrents and cures. The Food and Drug Administration issued an advisory telling consumers to use "extreme care" when purchasing online products that claim to diagnose, treat, or prevent the H1N1 virus. It sent warnings to eighty Internet purveyors of such products. "It's very important that consumers know these products can be deceptive and risky," said the deputy director of FDA's Office of Enforcement, Alyson Saben. The head of the Federal Trade Commission's Division of Advertising Practices, Richard Cleland, agreed: "Some marketers follow the news carefully . . . and take advantage of people who are fearful."

Respected Science Supplier Sells 'Ghost Gadgets'

Edmund Scientific, a longtime supplier of educational science supplies, recently added a "ghost detector" to their catalog.

To read this story, visit **www.csicop.org/SIExtras**

* * *

I doubt I was the only one amused this past summer by some Washington commentators' belated shock that there are people out there willing to believe anything, no matter how outlandish. I refer to reaction to the "birthers" movement, the loonies who maintain against all evidence that President Barack Obama was not really born in the United States and therefore can't be president. The fact that Obama was born in 1961 in Hawaii (part of the United States, last we checked) has been repeatedly attested to. But the claims and scenarios continue to be advanced, and believed, by many.

To Washington's shocked columnists, I say welcome to our world—the universe of unbelievable-yet-still-believed conspiracy theories and willing self-deception and gullibility that we skeptics deal with every day and have been investigating and exposing for decades. Claims of psychic powers, unknown-to-science energy forces that affect healing, imaginary cities on the moon, assertions that evolution can't be true and Earth is only 6,000 years old—all this is our daily stock-in-trade. So when the same kind of nonsense invades political discourse, who should really be surprised? But it presents to political writers the same kind of dilemmas we have always

Cryptozoology Museum Opens in Maine

Fans of Bigfoot, Ogopogo, the chupacabra, and other "mystery creatures" will finally have a place to see their favorite beasts—albeit in absentia. After years of searching, cryptozoologist Loren Coleman finally found a permanent place for his large collection of monster-related artifacts and ephemera. On November 1, 2009, the International Cryptozoology Museum opened in downtown Portland, Maine. The centerpiece of the collection is an eight-foot, four-hundred-pound Bigfoot created by a Wisconsin artist, and the museum includes hundreds of monster-related toys and souvenirs from around the world: artifacts, sculptures and art, a full-scale coelacanth fish model, over one hundred casts of (alleged) Bigfoot prints, jackalopes, and much more. The museum is located in the Arts District at 661 Congress Street. Hours of operation are 11 AM to 7 PM Tuesday through Saturday and noon to 5 PM Sunday. Admission is $5, and well-behaved skeptics are welcome.

—Benjamin Radford

Benjamin Radford is a writer and investigator with the Committee for Skeptical Inquiry. His book on the chupacabra mystery will be published later this year.

faced. As syndicated columnist Eugene Robinson concluded: "Trying to analyze the 'birther' phenomenon would mean taking it seriously, and taking it seriously would be like arguing about the color of unicorns. About all that can be said is that a bunch of lost, confused, and frightened people have decided to seek refuge in conspiratorial make-believe. I hope they're harmless. And I hope they seek help."

I often feel the same way about many of the self-deluded people we deal with in our pages.

Kendrick Frazier is editor of the SKEPTICAL INQUIRER.

Latest Texas 'Chupacabra' Exhibited in Creationist Museum

In August 2009 a man in the small town of Blanco, Texas, heard something attacking chickens in his cousin's barn. The animal escaped before he could catch a glimpse of it, but the man left poison for the creature. The next morning he discovered a dead animal unlike any he'd ever seen—a beast many would come to call a chupacabra (the mysterious vampiric animal of Hispanic folklore). The creature weighed about eighty pounds and resembled a coyote or dog, but its front legs were a few inches longer than those of most coyotes, and it was almost completely hairless.

The carcass was taken to local taxidermist Jerry Ayer, who agreed to stuff the beast. "I don't know what it is," Ayer told me in an interview. "It's very coyote-like, though. It resembles the shape of the coyote, it's got canine teeth, it's got the basic skeletal structure of a coyote . . . but I don't necessarily believe it's just a coyote with a bad case of mange."

Ayer doesn't think it's the bloodsucking beast either: "I don't believe in chupacabras," Ayer said emphatically. "I don't believe in any mythical beasts whatsoever. We labeled it that because everyone else was calling it that." Though Ayer does not believe in the chupacabra, he soon found that many others do. News of the find broke out just before Labor Day, and the taxidermy school where Ayer works started to receive up to one hundred calls a day from people asking about the chupacabra. He fielded interview requests from CNN, *Good Morning America*, and dozens of other media sources around the world. Ayer soon tired of the press blitz and sold the animal to John Adolfi, a real estate agent and part-time museum curator in New York state for an undisclosed sum (likely near $10,000).

The story of the Blanco chupacabra took an even stranger twist when Adolfi exhibited the beast as an example of the fallibility of science. His Lost World Museum (named after Sir Arthur Conan Doyle's 1912 novel in which dinosaurs still exist) features items and artifacts that he believes prove that scientists don't have all the answers. A creationist, Adolfi believes that Earth was created 6,000 to 10,000 years ago by God. By displaying the chupacabra, he believes that he has cast doubt on the credibility of mainstream scientists: If scientists scoff at the chupacabra's existence (yet here it obviously is!), could they also be wrong about evolution and the age of Earth?

The identity of the Blanco chupacabra remains a mystery for the time being. Tissue samples were taken, but DNA results have not yet been revealed. The two most common explanations are that it is either a hairless Mexican dog breed called Xoloitzcuintli (Xolo for short) or a mangy coyote. Indeed, chupacabras found in nearby Cuero, Texas, in 2007 were discovered to be coyote.

A closer look at the animal's discovery suggests nothing unusual or odd about

the find. In fact, there was no indication of the chupacabra's signature attack: blood mysteriously drained from chickens, goats, or other livestock. The circumstances are completely unlike the chupacabra and instead are consistent with an ordinary dog or coyote attack. "We don't know anything about that," said Ayer. "All he knew is that the animal was tearing up animals in his barn, so he put poison out. . . . There was no witness of any kind of blood sucking going on."

The Lost World Museum may hold the world's first stuffed and mounted authentic chupacabra. Or, once the DNA tests come in, Adolfi may find that he has purchased and displayed the world's most expensive dead dog or coyote. Only mainstream science—the very kind Adolfi seeks to discredit—will reveal the answer.

—Benjamin Radford

2012 Disaster Film: End of the World or New Age Cash Cow?

How disastrous is the new disaster film *2012*? Read Benjamin Radford's skeptical review of the film!

To read this story, visit **www.csicop.org/SIExtras.**

CSI's 'UFOs: The Space-Age Mythology'

DAVE THOMAS

The Committee for Skeptical Inquiry (CSI, publisher of the SKEPTICAL INQUIRER) held a workshop titled "UFOs: The Space-Age Mythology" in Tucson, Arizona, October 9–11, 2009. It brought scientists and researchers together with attendees from around the country for three days of intense discussions on "Unidentified Flying Object" (UFO) sightings and claims, practicalities of space travel, methodologies for finding life elsewhere in the universe, and much more.

James McGaha, chair of the proceedings, started off the workshop with a general introduction to the history of the UFO movement. McGaha, director of the Grasslands Observatory in Tucson, is a scientific consultant to CSI and a fellow of the Royal Astronomical Society. An astronomer and retired USAF pilot, he has logged over 40,000 hours of nighttime observations and spent thousands of hours flying, observing the sun and atmospheric phenomena. During that time, McGaha has seen many fireballs, satellite/booster reentries, mirages, atmospheric lensing, flares, ball lightning, St. Elmo's fire, lightning strikes, and Skyhook balloons—all phenomena that have led to numerous spurious UFO reports. He mentioned the trio of vision, perception, and interpretation and told the audience these topics would be explored heavily in the workshop.

McGaha also gave the next presentation, titled "Lights in the Sky," about the "Phoenix Lights" affair that occurred the evening of March 13, 1997. Thousands of witnesses reported a silent object over a mile wide that "must have been a UFO or secret weapon." McGaha showed that the "object" was a collection of several military flares (and/or the planes deploying those flares) and that witnesses seeing the mile-wide UFO were simply "connecting the dots." The "Stephenville Lights," seen in Texas on January 8, 2008, were also caused by military flares. This time, however, a major at the base nearby announced early on that "there were no F-16s from this unit operating" that night. McGaha inquired with the FAA and found that the base *was* deploying flights at that time. He wrangled a new press release from the 301st Fighter Wing correcting the error.

The Betty Hill abduction claim was addressed by Robert Sheaffer, an SI columnist, investigator, and author of *UFO Sightings* (Prometheus 1998). This story involves Betty and Barney Hill (both now deceased), who claimed in 1961 that a bright object near the moon followed their car in New Hampshire. Soon Betty began dreaming of being abducted by aliens. Under hypnosis, Betty described being shown star maps by the aliens. Skeptics who examined claims about the star maps, including Carl Sagan, found they relied on data fudging and cherry-picking. When she spoke to an initially friendly audience at the National UFO Conference in New York in 1980, Hill lost the audience with hundreds of unconvincing "UFO" blobs. Sheaffer concluded that this supposed abduction demolished the use of hypnosis to "recover repressed memories." Betty Hill clearly showed herself "to be a spinner of tall tales, and an extremely unreliable witness."

Saturday's session began with a talk by physicist and mathematician Dave Thomas, a CSI fellow, on the most famous UFO case of all, the Roswell Incident. A rancher's discovery of some odd-looking debris prompted the Army to announce a "flying saucer" had been found near Roswell. After being exposed as a balloon, the incident faded from view until the late 1970s, when it arose with an all-new mythology. Photographs of Major Jesse Marcel and others with the debris in Fort Worth, Texas, clearly show the remnants of a radar-reflector/balloon assembly (since identified as part

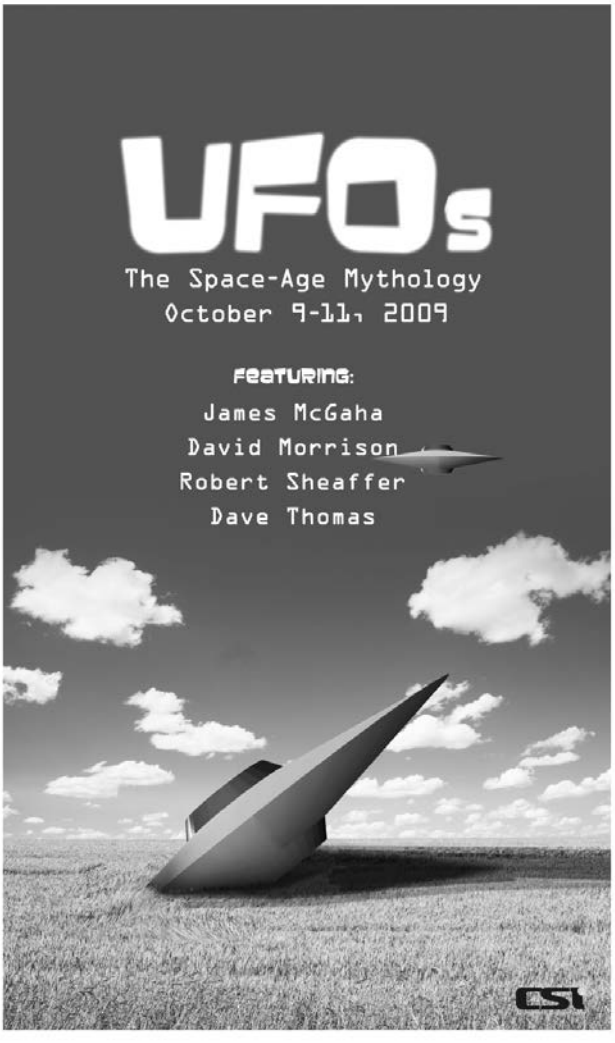
Dave Thomas, a CSI fellow, is a physics and mathematics graduate of New Mexico Institute of Mining and Technology and is currently a scientist/programmer at IRIS/PASSCAL in Socorro, New Mexico. He is the president of New Mexicans for Science and Reason.

of top-secret Project Mogul, an early attempt to monitor Soviet nuclear tests). However, most Roswell believers now claim the photos merely show substitute wreckage. The weather officer on duty that day was puzzled that Marcel was trying to convince him that alien writing appeared on the radar targets shown in the photographs. Attendance at Roswell's annual UFO festival commemorating the event has plummeted recently.

Robert Sheaffer examined the topic of UFOs in Mexico. When Venus was mistaken for a UFO during the eclipse of July 1991, the Mexican "UFO Blitz" was on. UFO promoter Jaime Maussan has produced scores of popular videos on paranormal events. Carlos Diaz of Tepoztlan claims several photographs of "plasma ship" UFOs. The active volcano Popocatapetl is considered a UFO base by many in the region. Sheaffer attended the "Beyond Boundaries" tour in 1996, featuring visits to Mexico's "hottest UFO hotspots." But nothing unusual was seen at the UFO Club in Metepec, alleged to be the "hottest UFO spot" in the country. The only physical evidence presented was a broken stick. The celebrated Campeche Infrared UFO Video of March 5, 2004, turned out to be just a couple of far-off oil rig flares enhanced by an infrared camera (see Sheaffer's September/October 2004 SI article). Sheaffer noted that Mexican UFOlogists, while giddily discussing UFOs swarming volcanoes, are extremely skeptical of U.S. UFO abduction stories.

David Morrison, director of the NASA Lunar Science Institute and senior scientist for astrobiology at the NASA Ames Research Center, spoke on "ET Life: Finding It." He stressed that "looking for aliens" is not the same as "looking for alien life." Many astrobiologists study microbial life in extreme environments right here on Earth, since we haven't yet obtained any extraterrestrial microbes. The closest indication of life beyond Earth so far was possible fossil microbes from Martian meteorite ALH4001; these assertions have since been discounted (though not disproved). In fact, it's difficult to even define "life." By analogy, we long *described* water as a clear liquid with characteristic properties, but only relatively recently have we been able to *define* water as an H_2O molecule. Methane on Mars and liquid water under Europa's ice are tantalizing areas of further investigation of the most basic of questions: what is life's beginning, distribution, and future?

Morrison also discussed lunar and Martian conspiracies. The "Face on Mars" was spotted by the Viking orbiter in 1977. Richard Hoagland says it's artificial, finding confirmation in the geometry of nearby "pyramids." When the Mars Observer failed, believers blamed aliens. When the Mars Global Surveyor clearly showed the face was just a rubble pile, believers claimed NASA had bombed it to pieces. Hoagland also claims large artificial glass structures exist on the Moon. But at least he thinks the Apollo landings really happened and were not a gigantic hoax. Those arguing the Moon landings never took place cite immature technology, converging shadows, death beyond the Van Allen belts, faked imagery, and alleged assassination of dissenting astronauts. Disproving the hoax are 400,000 NASA Apollo workers; a dozen Apollo astronauts who walked on the Moon; kilograms of unique lunar samples they gathered; tracking by Britain and the USSR; laser mirrors left on the Moon; and recently, crisp new images of landers, ALSEP packages, and even astronaut footprints (SI, November/December 2009).



Robert Sheaffer then described cases with "Physical Evidence of UFOs." The supposed Aztec, New Mexico, UFO landing of 1948 was said to involve recovery of a 99.99-foot-long Venusian saucer. When *TRUE* magazine reporter J.P. Cahn managed to snatch an alleged sample from the man who started the claims, oil swindler Silas Newton, tests showed it was just ordinary aluminum. An acorn-shaped object was recovered after a fireball "landed" near Kecksburg, Pennsylvania, in 1965, but the incident was actually caused by the Great Lakes Fireball of December 9, seen all over the region. Believers still consider the Trent photographs of a saucer from McMinnville, Oregon, in 1950 some of the best in existence. A common truck mirror not only matches the shape of the alleged saucer, but its reflective surface explains why the image of the saucer appears to be far away. Sheaffer

IGNITE THE ADVENTURE

The New Future Fund

"Knowledge is an unending adventure at the edge of uncertainty."

– Jacob Bronowski, scientific polymath

For a more rational tomorrow … and the future of Skeptical Inquirer … please support the new phase of the Center for Inquiry New Future Fund.

Across our world, forward-thinking men and women have recognized the scientific paradigm as their surest guide for sound thinking and living. For them knowledge is the greatest adventure. Today the Center for Inquiry movement strives to keep the adventure of knowledge accessible to all. To defend science, reason, freedom of inquiry, and human values in an ever-changing world, we must adopt new methods … new approaches. To realize tomorrow's ambitious goals, we must expand our organization.

The New Future Fund is an audacious, multiyear $26 million campaign to fund program needs, capital expansion, and endowment for the Committee for Skeptical Inquiry (CSI) and the Center for Inquiry.

In this new phase the focus turns to:

- **Outreach and education: publishing, media relations, personal outreach, and more**
- **Influencing public policy through our Center in the nation's capital**
- **Enhancing the Committee for the Scientific Examination of Religion (CSER)**
- **The Naturalism Research Project: library expansion, research fellowships, and other initiatives to spur exploration of the naturalist tradition**
- **Transnational development: reaching beyond borders through the United Nations and direct activism around the globe**

As always, the New Future Fund supports new and established programs, including Skeptical Inquirer and CSI's vital media and public education work. Because our work is so important, please make your most generous gift today to support program expansion. By pledging a larger gift over a three- or four-year period, you may find a significant contribution more affordable. Our development staff stands ready to answer questions you may have about asset transfers, planned giving arrangements, and the like. All gifts are fully tax-deductible to the extent allowed by law.

For more information or to make a gift, return the tear-out card facing this ad or contact:

Center for Inquiry | Department of Development
P.O. Box 741, Amherst NY 14226-0741
1-800-818-7071 | development@centerforinquiry.net

cfi CENTER FOR INQUIRY

CSI Committee for Skeptical Inquiry

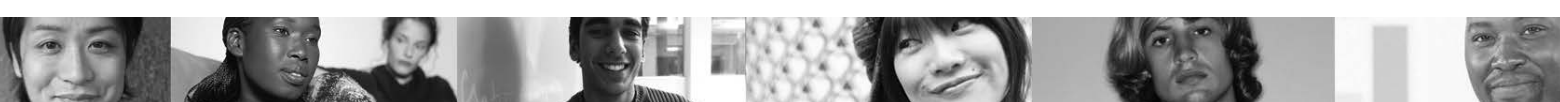
THIS IS NOT LEGAL ADVICE. ANY PROSPECTIVE DONOR SHOULD SEEK THE ADVICE OF A QUALIFIED ESTATE AND/OR TAX PROFESSIONAL TO DETERMINE THE CONSEQUENCES OF HIS OR HER GIFT.

Toni Van Pelt, Paul Kurtz, and Ron Lindsay (standing); Lawrence Krauss, David Helfland, and Nobel Laureate Paul Boyer (seated) introduced the Declaration in Defense of Science and Secularism at the inaugural press conference of the Center for Inquiry/Office of Public Policy in Washington, DC.

Local leaders, campus activists, and students from around the world came together at CFI's Summer Session.

Latin American and U.S. skeptical activists met at the CFI-sponsored First Iberoamerican Conference on Critical Thinking in Peru.

The new Naturalism Research Project will more than double our library facilities and create a collegial setting for scholarly dialogue and research.



concluded that no cases of crashed saucers or implants can be documented.

When UFO reports are made by pilots, military personnel, or the police, believers say the witnesses are credible "trained observers." James McGaha noted that no observational training is provided for such careers. Pilots and police don't learn about locating Venus and other planets and stars or about bizarre atmospheric phenomena (sun dogs, mirages, refraction, lenticular clouds, etc.). A pilot who knows jets or airplanes might not be able to identify a bolide (meteor) or a high-altitude research balloon. Vision itself is only a model of reality and can be fooled in myriad ways. Optically, the human eye is a feeble low-resolution system affected by severe chromatic aberration and astigmatism. It's no surprise that amateur astronomers, who *are* trained as observers of the sky, have the lowest rate of making UFO reports.

Up next was "Aliens Among Us." McGaha noted that 45 to 60 percent of Americans believe aliens and UFOs are real and that 71 percent think the government is hiding related evidence. Because there are so many stars and planets, believers feel that intelligent life *must* have visited Earth. He discussed mainstream efforts to find out if we are alone in the universe (Fermi Paradox, Drake Equation, and others). As for wormholes being an easy way out of the problems facing space travel, McGaha reminded the audience of Matt Visser's recipe for dragon stew: "First, find a dragon." He calculated the energy required to send a large ship on a space journey; whatever fuel is needed to just get up to near light speed will be quadrupled for a round-trip journey to a remote star. Such a journey would require billions of times humanity's historical production of energy. McGaha declared the idea of alien visitation a "failed hypothesis."

Dave Thomas began the Sunday session with another look at the alleged Aztec, New Mexico, UFO landing of 1948. About ten years ago, the town of Aztec started an annual UFO festival, and the mysterious "Mr. X" (since revealed as Scott Ramsey) has successfully revived the mythical story. One of the most famous landing cases was reported in 1964 by Socorro, New Mexico, policeman Lonny Zamora. Besides aliens from space, conjectures for that event include a hoax to promote the town, an early balloon flight, a Lunar Surveyor landing test, and a college prank. A Surveyor craft *was* being tested near Socorro that day, suspended from a small Bell helicopter. An old letter from the local college president to Linus Pauling, saying the affair was a student's hoax, has rekindled interest in that hypothesis.

Destruction of Earth by a rogue planet was the next topic. David Morrison said that fears of Planet X, or Niburu, began with books by Zecharia Sitchin. Nancy Lieder sparked fear on the Internet when she warned Planet X would destroy Earth in 2003. When that didn't happen, the rogue planet was rescheduled to destroy Earth in 2012, coincident with the supposed end of the Mayan calendar. On his "Ask an Astrobiologist" Web page, Morrison answers impassioned letters from people with comments like "My wife is pregnant, and she has been unable to sleep for the past week because she is afraid about the coming destruction of the Earth." Hollywood made things worse by creating a fake Web site to promote the November 2009 movie *2012*. (For more, see Morrison's "Update on the Niburu 2012 Doomsday," SI, November/December 2009.)

A lively question and answer session capped off Sunday morning, touching on various topics including global warming (of which McGaha and Sheaffer were skeptical and Morrison and Thomas were alarmed). Several attendees went on the tour of the Pima Air and Space museum. All in all, it was a successful and enjoyable conference. □

Belgian Miracles

A member of the European Union, Belgium is located between the Netherlands, Germany, and France. The country takes its name from its first recorded inhabitants, ancient Celts known as Belgae, and has a rich history, having been a province of the Roman Empire, the heart of the Carolingian dynasty, and a celebrated medieval textile center. Today, among its many great attractions are such historic cities as Brussels, Ghent, and Bruges, together with museums of Flemish art. While it is a country of scientific advances (a world leader in heart and lung transplants as well as in fertility treatments [*World* 2000, 129]), it is also, according to many, a place of miracles.

I made my first investigative pilgrimage to Belgium in 1998 (accompanied by local skeptic Tim Trachet). I returned in 2006 (with Dutch science writer and translator Jan Willem Nienhuys) as a side excursion from travels in the Netherlands (Nickell 2007a). On both occasions, I looked at purported wonders such as the healing shrine known as the Belgian Lourdes, an ancient miracle statue, and a vial of the Holy Blood of Christ.

Joe Nickell, CSI's senior research fellow, is author of many books, including Looking for a Miracle *and* Relics of the Christ. *His Web site is at www.joenickell.com.*

Copy photo from shrine at Oostakker, Belgium, by Joe Nickell

Figure 1. The lower left leg bones of Pierre De Rudder, allegedly healed by a miracle in 1875.

The Belgian Lourdes

I have twice visited the Shrine of Our Lady of Lourdes (named after the famous healing-spring grotto in the French Pyrenees) at Oostakker, Belgium. The shrine's most celebrated miracle is the healing of a laborer named Pierre De Rudder, whose lower left leg was broken by a felled tree in 1867. Reportedly, De Rudder refused amputation and for eight years suffered constant pain from his open and festering wound. Then in April 1875, he visited the Oostakker shrine where, allegedly, he was instantaneously healed, after which he "walked normally until his death in 1898" at age seventy-six (Neiman 1995, 100–101). On July 25, 1908, the Holy See of Bruges declared the healing supernatural.

Over time, a number of legends grew up about the case, including a claim that De Rudder had been treated by professor Thiriar, physician to King Léopold II (a claim dropped by the miraculists after a denial by Thiriar himself). More significantly, it was claimed that prior to 1875 De Rudder's unmended leg could be twisted at the fracture point to the extent of revolving the foot half a turn (i.e., putting the heel in front). Then, when De Rudder was allegedly cured in 1875, the mending was "instantaneous." Unfortunately, most of the important testimony in the case went unrecorded for eighteen years, and memories of this age are subject to error (Delcour 1987).

For example, Dr. Van Hoestenberghe claimed that he had performed the twisting movement on De Rudder's leg, when in fact the physician's recollection was a false memory. A letter he had written on May 12, 1875 (which had become lost by the time of a canonical inquiry in 1893 but was rediscovered by

1957) revealed that he had not performed the twist, nor even seen it, but had only heard persons talk about it.

Moreover, the twist was apparently not demonstrated at the point of the fracture by showing the naked leg. Instead, it was done with the leg clothed, so the observers could not know where the twist actually occurred. This is a crucial point because certain supple persons can turn their feet almost completely around, like De Rudder, without benefit of any abnormal mobility.[1] Although some claimed the leg was uncovered when they saw De Rudder twist it, two men who were present for his demonstrations "well over a hundred times" stated the leg was never naked on those occasions (Delcour 1987). De Rudder's eagerness to demonstrate the effect at every opportunity suggests not a suffering man happy to suffer more but someone performing a stunt with a purpose—one that will soon become clear.

As to the supposed instantaneous nature of the healing, that claim depends on the dubious testimony of just three persons: an illiterate woman who was apparently represented by hearsay and a father and son who seemed eager to help certify a miracle. (Their story even improved over the years.)

In contrast is the evidence that De Rudder had actually undergone "a certain improvement" about fourteen months after the accident. We know that the Viscount who employed De Rudder at the time of the accident gave the invalid worker a pension, characterized as a "nice salary." It was rumored about the village that De Rudder was malingering in order to effect a life of ease.

After the Viscount died on July 26, 1874, his heir stopped the pension, whereupon De Rudder's wife and daughter had to begin working. Some eight months later, De Rudder may have hit on a clever plan that would allow him to abruptly end his pretended disability so he could, necessarily, return to work: he went to Oostakker and claimed a miraculous cure. However, he returned home with a scar that, reported by Dr. Van Hoestenberghe, was "such as one finds a long time after a healing" (qtd. in Delcour 1987).

Other medical evidence likewise supports the view that De Rudder's healing was less than miraculous. A broken leg such as he suffered could—with immobility and good hygiene—have healed without amputation. Besides, the bones (see figure 1) grew together obliquely in a fashion a surgeon would not have been proud of. Also, that which would have indeed been beyond nature—the reconstitution of De Rudder's dead tendon—did not occur (De Meester 1957, 106). One touted proof that the cure was instantaneous comes from the absence of thickening of the bone callus at the mending site, but this thickening could have been reabsorbed by the body in several months or a few years (*Encyclopedia Britannica* 2009, s.v. "callus"). Adrien Delcour (1987) concludes that the physicians who consider the De Rudder case miraculous almost unanimously do so on the basis that the cure was instantaneous, and that, as we have seen, is dependent on dubious testimony. Indeed, there is evidence to the contrary.

The De Rudder case gives one pause regarding other claims of miraculous healing at Oostakker, Lourdes, and elsewhere. Such certifications are often vague and unscientific. *Miracle* is not a scientific concept, and miracle claims are typically only those found to be "medically inexplicable." Thus, claimants are engaging in a logical fallacy called "arguing from ignorance"—that is, drawing a conclusion based on a lack of knowledge (Nickell 2007, 202–205). The De Rudder case is even worse, since there is evidence that an injury, healed long before, was passed off as instantaneous—a miracle that wasn't.

Photo by Joe Nickell

Figure 2. This little statue of the Virgin at Belgium's most-frequented pilgrimage site is said to be miraculous despite being a replacement.

Miracle Statue

Belgium's most frequented pilgrimage site is Scherpenheuvel (Dutch for "sharp hill") in the north-central part of the country. There, in the Middle Ages, stood a great, solitary oak that was visible from all around. The spot was a center of superstitious practices and pagan worship until, in the fourteenth century, a small wooden figure of the Virgin Mary was affixed to the tree, and the makeshift shrine began to gain fame. In time, miracles began to be attributed to the little statue (see figure 2).

The first reputed miracle occurred in 1514 when, according to a pious little legend, a shepherd or shepherd boy discovered the figurine lying on the ground and intended to take it home. However, the Virgin Mary miraculously transfixed him—froze him in place—preventing the statue's removal. Subsequently, the shrine became more widely known.

In 1602, a little wooden chapel was built at the site, and the following year a new miracle was reported: the statue wept bloody tears, reportedly in protest

over the religious schism then plaguing the Low Countries.

Still another miracle was said to have occurred in 1604 when troops of the Archduke Albert (the Spanish-appointed governor of the Low Countries) routed the Protestants and retook Ostend. Albert and his wife, the Archduchess Isabella, determined to thank God by commissioning the erection of a monumental baroque basilica at the site, inaugurated in 1627. Albert died in the meantime, but Isabella walked to the inauguration, giving rise to pilgrimages that have continued ever since, supplicants seeking their own miracles in the form of healings and other blessings (*Scherpenheuvel* n.d.; *Scherpenheuvel-Zichem* n.d.; "Scherpenheuvel-Zichem" 2009).

What are we to make of the alleged miracles of Scherpenheuvel? First, we should remember that the site was considered magical before it was taken over by Catholic Christians, part of a common process known as syncretism in which one religion is grafted onto another. (For example, Catholic conquistadors in Mexico erected a shrine to the Virgin Mary on a hill where the Aztecs had a temple to their virgin goddess Tonantzin [Mullen 1998, 6; Smith 1983, 20; Nickell 1993, 29–34; Nickell 2004, 51–55].) In short, one may ask, are the alleged miracles of Scherpenheuvel attributable to the statue of the Virgin and the power of the Virgin herself or to pagan deities? Or might there have been no miracles at all?

The story of the transfixed shepherd boy is one of those vague, pious folktales lacking any evidence to support it. If we are prepared to believe a shepherd boy considered taking the statue, we can also believe it was only an attack of conscience that stayed his hand, and the rest of the tale is attributable to exaggeration.

As to the statue's bloody tears, that figurine was not the same one that had transfixed the shepherd boy. The original had been stolen in 1580 when the region was pillaged by Dutch Protestant iconoclasts (those hostile to the worship of images). In other words, the statue that legendarily saved itself from a shepherd's grasp was unable to stave off marauding anti-idolaters, suggesting at best its powers were limited.

Thus the bloody tears were produced by a *replacement* statue, and in any case, the phenomenon—judging from numerous modern examples—was likely a pious fraud. In 1985, for instance, a statue of the virgin that wept and bled in the home of a Quebec railroad worker proved on examination to have an applied mixture of blood and animal fat. When the room warmed from the body heat of the pilgrims, the substance liquefied and trickled realistically. In another case in Sardinia, Italy, in 1995, DNA tests on the blood revealed that it belonged to the statue's owner (Nickell 2007b, 227–228). (Her attorney explained, "Well, the Virgin Mary had to get that blood from somewhere.")

The 1604 military victory at Ostend does not seem so miraculous if one adopts the perspective of the Protestants or if one wonders why we should think statues miraculous when desirable things happen (a statue's theft is prevented, a battle

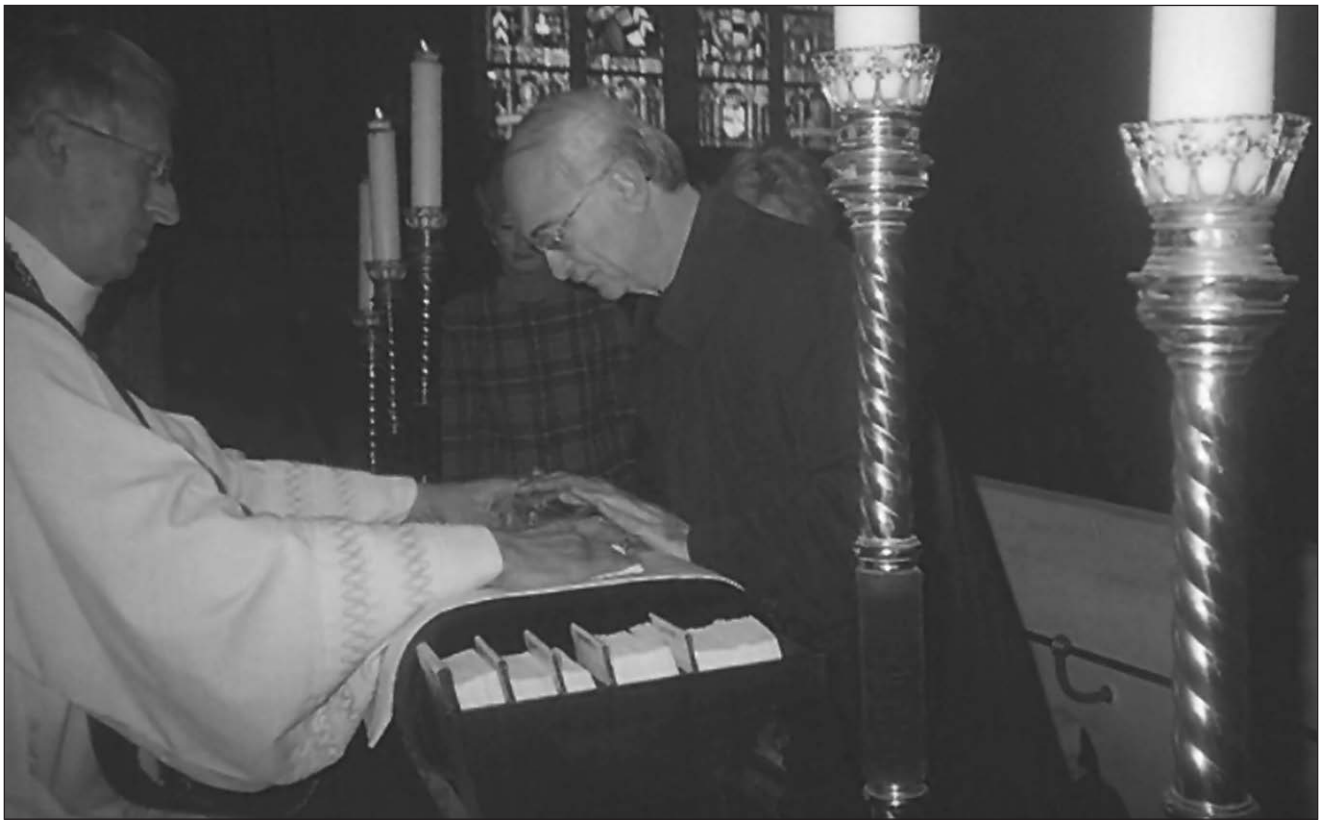


Photo by Jan Willem Nienhuys

Figure 3. Joe Nickell appears to be venerating the Holy Blood at Bruges but is really only getting a good look at it!

won) but not *un*miraculous when bad things occur (a statue is stolen, marauders overrun the land).

Given the image of the Virgin Mary as healer and protectress (Mullen 1998, 10), it is not surprising that desperate people still seek miracles at Scherpenheuvel, where I have witnessed the votive candles, the fervent prayers, the posted notes beseeching "Moeder Maria" for supernatural assistance. Such help may seem to come to those who count only the good luck; otherwise they discount the bad or even—sad to say—blame themselves for not praying hard enough.

The Holy Blood

John Calvin (1543, 226) critically observed that alleged blood of Jesus "is exhibited in more than a hundred places," one of the most celebrated being the Basilica of the Holy Blood in Bruges. I twice visited the site, and on the second occasion (October 25, 2006) I was able to hold in my hands the reliquary supposedly containing the very blood of Christ (figure 3). It has been called "Europe's holiest relic" (Coupe 2009, 132).

According to legend, the Bruges relic was obtained in Palestine in the mid-twelfth century, during the Second Crusade, by Thierry of Alsace. He allegedly received it from his relative Baldwin II, then King of Jerusalem, as a reward for meritorious service. However, chronicles of the crusades fail to mention the relic being present in Jerusalem (Aspeslag 1988, 10). Sources claim that Thierry, Count of Flanders, brought the relic to Bruges in 1150, while another source reports it arrived in 1204. In any event, the earliest document that refers to it dates from 1270 (*Catholic Encyclopedia* 1913, s.v. "Bruges"; Aspeslag 1988, 9–11).

The reliquary, housed in the twelfth-century Basilica of the Holy Blood, is now brought out daily for veneration by the faithful. Although mistakenly characterized by at least one source as "a fragment of cloth stained with what is said to be the blood of Christ" (McDonald 2009, 145), it in fact consists of "clotted blood" contained in a vial set in a glass-fronted cylinder, each end of which is covered with gold coronets decorated with angels. The vial (made of rock crystal rather than glass) has been determined to be an eleventh-or twelfth-century Byzantine perfume bottle.

In 1310 Pope Clement V issued a papal bull granting indulgences to pilgrims who visited the chapel at Bruges and venerated the blood. At that time, believers claimed the blood miraculously returned to its original liquid state every Friday at noon. This not only sounds like a magic trick, but it evokes the similar "miracle" of the blood of St. Januarius at Naples—a phenomenon that forensic analyst John F. Fischer and I replicated, utilizing a mixture of olive oil, melted beeswax, and red pigment. In addition to St. Januarius, some twenty other saints have reportedly yielded magically liquefying blood. My Italian colleague, chemist Luigi Garlaschelli, externally examined one of these in its sealed vial and discovered that the "blood" simply liquefied whenever the temperature rose (Nickell 2007c, 44–49, 169–170).

Unfortunately, the Holy Blood at Bruges soon stopped liquefying, supposedly as the result of some blasphemy that occurred later in 1310. The miracle recurred only one more time, in 1388 (Aspeslag 1988, 11).

Naturally, I wanted to get a good look at the "blood," so I twice stood in the pilgrims' line, supposedly to pray over the reliquary (again, see figure 3). In fact, although I bowed respectfully, I used the two brief occasions to scrutinize the substance. I observed that it had a waxen look and was bespeckled with "coagulated drops" that have suspiciously remained red (Bruges 1998, 28) unlike real blood, which blackens with age (Kirk 1974, 194–195).

In brief, the Holy Blood of Bruges lacks a credible provenance, since it has no record for a dozen centuries after the death of Jesus and is contained in a medieval bottle. It appeared with a profusion of other dubious blood relics, including several with which it had in common the property of liquefying and resolidifying, suggestive of a magic trick. Both that behavior and its current appearance are incompatible with genuine old blood and are instead indicative of a pious fraud. □

Note

1. States Adrien Delcour (1987): "At the price of slight hip dislocation certain rather supple persons (the author of the present lines, for example) can manage without effort to turn their foot around, with the great toe almost to the back by rotation [of] the ankle. This exercise should have been easier for De Rudder because he had lost the extender tendon of the big toe."

References

Aspeslag, Pierre. 1988. *Chapel of the Holy Blood, Bruges*. Ostend, Belgium: s.v. Van Mieghem A.

Bruges Tourist Guide. 1998. Brussels, Belgium: Editions THILL S.A.

Calvin, John. 1543. *Treatise on Relics*, trans. Count Valerian Krasinski 1854; 2nd ed. Edinburgh: John Stone, Hunter, and Col., 1870, 217–218. (Reprinted without translator's notes but with an introduction by Joe Nickell, Amherst, NY: Prometheus Books, 2009.)

Catholic Encyclopedia. 1913. New York: Encyclopedia Press.

Coupe, Alison, ed. 2009. *Michelin Belgium Luxembourg* (travel guide). Watford, Herts, England: Michelin Apa Publications.

Delcour, Adrien. 1987. A great 'Lourdes miracle': the cure of Pierre de Rudder or, what is the value of testimony? A paper by Delcour of Brussels, Belgium, translated by Jan Willem Nienhaus.

De Meester, Canon A. 1957. Report of the Holy See of Bruges; cited in Delcour 1987.

Kirk, Paul L. 1974. *Crime Investigation*, 2nd ed. New York: John Wiley and Sons.

McDonald, George. 2009. *Frommer's Belgium, Holland & Luxembourg*, 11th ed. Hoboken, NJ: Wiley.

Mullen, Peter. 1998. *Shrines of Our Lady*. New York: St. Martin's Press.

Nieman, Carol. 1995. *Miracles: The Extraordinary, the Impossible and the Divine*. New York: Viking Studio Books.

Nickell, Joe. 1993. *Looking for a Miracle*. Amherst, NY: Prometheus Books.

———. 2004. *The Mystery Chronicles: More Real-Life X-Files*. Lexington, KY: University Press of Kentucky.

———. 2007a. The Netherlands: Visions and revisions. SKEPTICAL INQUIRER 31:6(Nov./Dec.), 16–19.

———. 2007b. *Adventures in Paranormal Investigation*. Lexington, KY: University Press of Kentucky.

———. 2007c. *Relics of the Christ*. Lexington, KY: University Press of Kentucky.

Notre Dame de Lourdes a Oostakker. 1975. Souvenir booklet in French ("Imprimatur Gradae, 7–4–1975, O. Schelfhout, vic. Gen."), distributed at the shrine.

Scherpenheuvel: Famous Shrine of Our Lady. N.d. Pilgrimage information sheet in English, provided at the basilica.

Scherpenheuvel-Zichem. N.d. Large color folder with text in four languages. Brabant, Belgium: Hageland.

Scherpenheuvel-Zichem. 2009. Available online at http://enwikipedia.org/wiki/Scherpenheuvel-Zichem (accessed August 4, 2009).

Smith, Jody Brant. 1983. *The Image of Guadalupe*. Garden City, NY: Doubleday.

World Desk Reference, 3rd ed. 2000. New York: Dorling Kindersley Publishing.

Thomas Gold: Is the Origin of Oil Nonbiological?

Thomas Gold
Deserted the fold
Of orthodox geology,
For which he never made the slightest apology.

—a clerihew by Armand T. Ringer

Thomas (Tommy) Gold was born in Vienna in 1920 and died in Ithaca, New York, in 2004 at age eighty-four. Few scientists since Kepler have combined such brilliant intuitive insights with views considered flaky by colleagues. Gold has become an outstanding example of a modern iconoclast. As Freeman Dyson wrote in his foreword to Gold's only book, *The Deep Hot Biosphere* (1999), "Gold's theories are always original, always important, usually controversial—and usually right."

A professor of astronomy at Cornell, Gold first became well known, along with Hermann Bondi and Fred Hoyle, as one of the three big defenders of the steady state theory of the universe. It was a respectable theory until it was shot down by the discovery of microwave radiation left over from a Big Bang.

Gold's first unorthodox theory dealt with the workings of the inner ear. It was widely attacked as nonsense by physicists until to their surprise it was proved correct. Next, Gold suggested that the pulsating radiation of a pulsar was caused by the rapid rotation of a neutron star. The theory was so vigorously attacked by astronomers that Gold was denied permission to speak at the first international conference on pulsars. His conjecture was soon confirmed after the discovery of a giant pulsar in the Crab Nebula.

Image: Wikipedia

While NASA was preparing to land astronauts on the Moon, Gold was in the news for predicting that they and their spacecraft might sink in several feet of what was called Gold dust. Gold soon revised his prediction to a few inches, which turned out to be the case. The Moon's surface is indeed covered with a powdery substance.

Gold's most controversial conjecture, which he defended tirelessly in his later years, was a conviction that petroleum, or black Gold as it is sometimes called, was not a product of life forms, such as decomposing ferns and fishes. It originated in ancient deposits of hydrocarbons, such as methane, going back to the earliest centuries of Earth's history. Over billions of years, this nonbiological "oil" slowly seeped upward, contaminated by biological molecules along the way, to become trapped in pools under limestone domes. In brief, contrary to the almost unanimous opinion of geologists everywhere, oil is not a fossil fuel! Gold was convinced that if we could tap into these deep and vast deposits of hydrocarbon, we could obtain ten times the oil now reachable by our shallow drilling.

Almost no one, even in Russia where a similar theory about the origin of oil had been advanced, paid attention to Gold's vigorous promotion of his theory. Eventually he persuaded a group in Sweden to test his theory by drilling extremely deep wells, but the wells failed to confirm his conjecture.

Martin Gardner's latest book is When You Were a Tadpole and I Was a Fish, and Other Speculations About This and That *(Hill and Wang).*

In 1989 Gold published a paper in *Speculations in Science and Technology* (volume 12, pages 245–253) titled "The Inertia of Scientific Thought." It is a powerful blast at establishment science for what Gold called its "herd" instinct. He cites as examples the initial opposition to his theory about how the inner ear processes sound and the later opposition to his theory that pulsars are rotating stars.

Gold details the herd mentality that he believed caused such violent opposition to his theory about the origin of oil. It almost completely stopped research, making it nearly impossible to get papers published defending the theory or to obtain funding for research.

This herd mentality was not always there, Gold writes, especially in the arts. He quotes passages from an amusing book titled *The Experts Speak*. Edouard Manet wrote to Claude Monet: "Renoir has no talent at all, that boy. . . . Tell him to give up painting." Rembrandt, Gold adds, was considered inferior to that "extraordinarily gifted artist, Mr. Ripongill."

William Blake, painter as well as poet, called Titian and his fellow Venetian artists "idiots and not artists." Tchaikovsky called Brahms a "scoundrel" of "inflated mediocrity."

Gold's most controversial conjecture: Contrary to the almost unanimous opinion of geologists everywhere, oil is not a fossil fuel!

Gold writes: "I have made people absolutely wild, shaking wild, shaking their fists at me, when I proposed in my talks that there was some uncertainty about the origin of petroleum. . . . That is my sad story."

Will Gold's theory about the origin of black gold eventually hold up? Will he become another Alfred Wegener? Almost all geologists once assumed that the obvious fit of the east side of the South American continent with the west side of the African continent was sheer coincidence. Wegener believed the continents were once joined but drifted apart. He died of exposure after he got lost in the Arctic and never knew that his theory of continental drift was finally verified. Indeed, it is continental drift, via sea-floor spreading and plate tectonics, that crumples Earth's crust into mountain ranges.

Will Gold's theory of oil's origin some day be confirmed? This seems now to be very unlikely. But maybe I'm just following the herd! □

Skeptical Inquirer
THE MAGAZINE FOR SCIENCE AND REASON

CSI
Committee for Skeptical Inquiry

There's much more SKEPTICAL INQUIRER content available on our Web site!

Here's a sample of what you'll find at **www.csicop.org:**

Tonya Keyser's article Giving Up the Ghost in Gettysburg examines the strange claims and logic of Gettysburg ghost hunters.

Austin Dacey's two-part Notes from the Harmonious Society: Dissident Science in China looks at the scientific community in China, and how the critical rationalist spirit is expressed in their lives.

CSI
The Committee for Skeptical Inquiry
RESOURCES
PUBLICATIONS
CSI NEWS
ABOUT CSI
MORE OPTIONS
Skeptical Inquirer
subscribe now
Search CSI:
Google™ Custom Search
E-Mail Updates
Enter your email address for updates from CSI
email@example.com
CSI Degrees Online
Earn Your CSI Degree 100% Online! Full Financial Aid Available.
Ads by Google
CSI is not responsible for the content of this advertisement
Donate securely to CSI.
The Committee for Skeptical Inquiry
The Committee for Skeptical Inquiry promotes science and scientific inquiry, critical thinking, science education, and the use of reason in examining important issues. It encourages the critical investigation of controversial or extraordinary claims from a responsible, scientific point of view and disseminates factual information about the results of such inquiries to the scientific community, the media, and the public.
New Articles from SKEPTICAL INQUIRER Volume 33.5
September / October 2009
Selected articles by:
• Christopher C. French
• Joe Nickell
• Lorne Trottier
• Martin Gardner
• Richard Wiseman
• S.T. Lakshmikumar
• Sebastian Dieguez
• Stuart D. Jordan
• Susan Blackmore
• Tracy King
Available Online Now...
Skeptical Inquirer
POWER LINE PANIC
AND CELL PHONE MANIA

For more online columns, features, and special content, visit **www.csicop.org/whatsnew.**

The Shroud of Turin Duplicated

The Italian Committee for the Investigation of Claims of the Paranormal (CICAP) celebrated its twentieth anniversary with a special three-day conference in October 2009. One of the highlights was the presentation of the results of an extraordinary experiment performed by my good friend and colleague Luigi Garlaschelli. The news was quickly picked up by international media. As soon as the Reuters agency sent out a press release, newspapers and television outlets around the world took notice. The reason is quite simple: for the first time, Garlaschelli has reproduced a life-size replica of the Shroud of Turin.

Measuring fourteen feet, four inches by three feet, seven inches, the shroud bears the image of a crucified man some believers say is Christ, eerily reversed like a photographic negative.

The history of the shroud is long and controversial. After first surfacing in France, it was brought by Italy's former royal family, the Savoys, to their seat in Turin in 1578. In 1983, ex-King Umberto II bequeathed it to the late Pope John Paul II. The shroud was nearly destroyed in 1997 when a fire ravaged the Guarini Chapel of the Turin cathedral where it is held, but a fireman risked his own life to save the cloth.

The cloth was branded a medieval artifact after carbon 14 dating. The most definitive study occurred in 1998 and consisted of tests by three separate institutions, which were granted permission by the Vatican. Laboratories at the University of Oxford, the University of Arizona, and the Swiss Federal Institute of Technology used radio carbon dating on different portions of the cloth. They found the shroud dated from circa 1260–1390.

However, many still believe it is the real burial cloth of Jesus on the basis of other evidence. Part of the controversy arises from the fact that, until now, it has proven difficult to understand the mechanisms of its formation and to obtain by simple means an acceptable replica of the shroud and its features. That's why many call it "an impossible image."

The Lab Experiment

"The most likely explanation, in my opinion," said Garlaschelli, a professor of organic chemistry at the University of Pavia, "is that the image, as it can be seen nowadays, is a chemical etching of the cellulose of the linen fibers. This degradation can be accounted for by non-neutral impurities contained in the ochre that a mediaeval artist used to generate the image by a simple frottage technique. The original pigment came off during the many years of the shroud's history, leaving the well-known weak ghostly image. This hypothesis, originally put forward by Joe Nickell, had never been experimentally tested before."

As he did fifteen years ago with the "miracle" blood of St. Januarius, Garlaschelli set out to reproduce the full-sized shroud using materials and techniques that were available in the Middle Ages.

Garlaschelli placed a linen sheet, hand woven for the occasion, flat over a volunteer and then rubbed the linen with a pigment containing traces of acid. The face was obtained from a bas-relief in order to avoid the inescapable wrap-around distortion. Garlaschelli then retouched the image by hand after laying the cloth flat on a tabletop. He artificially aged the pigment by heating the cloth in an oven and washing it, removing the pigment from the surface but leaving the fuzzy, half-tone image similar to that on the shroud. Garlaschelli then added blood stains, burnt holes, scorches, and water stains to achieve the final effect.

The result is impressive. The Shroud of Turin and Garlaschelli's replica look remarkably alike.

"Our goal was not to show that the Shroud of Turin is a fake, but rather that it is possible to reproduce something which has the same characteristics of the shroud," said Garlaschelli. "We have also shown that pigments containing traces of acidic compounds can be artificially aged after the rubbing step (by heating the cloth in an oven) in such a way that, when the pigment is removed, an image is obtained having all the characteristics of the Shroud of Turin. In particular, the image is a pseudo-negative, is fuzzy with half-tones, resides on the topmost fibers of the cloth, has some 3-D embedded properties, and does not fluoresce."

Garlaschelli does not expect to convince the believers, which was never his goal. "If they don't want to believe carbon dating done by some of the world's best laboratories, they certainly won't believe me. However, we think that our attempts represent an interesting addition to the ongoing debate on this maybe-not-so-impossible image." □

Massimo Polidoro is an investigator of the paranormal, author, lecturer, and co-founder and head of CICAP, the Italian skeptics group. His Web site is www.massimopolidoro.com.

Is There a Difference between Basic and Applied Science?

Humans like to classify things into discrete boxes. It helps us make sense of our complex and often chaotic world. A classic problem in philosophy is whether our classifications "cut nature at its joints," as the saying goes, i.e., whether human classification reflects the realities of the world instead of just being an arbitrary heuristic device that helps us muddle through things. Of course, we have good examples of both types of situation: The periodic table of the elements does seem to reflect a fundamental structure of the world itself regardless of the human penchant for organizing things. However, classifying Pluto as a planet, planetoid, or giant asteroid is, to a large degree, a matter of astronomers' arbitrary preferences (see "Thinking about Science," SI, January/February 2006).

The same kind of problem arises when we want to put some order into the barrage of academic disciplines that have developed during the past several hundred years. So that universities can be run with a semblance of efficiency, we distinguish a department of philosophy from one of biology and even separate groups of disciplines into different colleges or divisions (humanities versus sciences, for instance). This makes sense from an administrative point of view and helps faculty focus on the kind of teaching and scholarship they are interested in doing, but it also carries the danger of compartmentalizing resources and people to the point of making cross-disciplinary interactions inordinately difficult. Having made a career of walking the line between disciplines, I am certainly aware of the dangers and wasted opportunities caused by arbitrary and rigid divisions where flexibility would be more sensible. Still, it is undeniably true that the kinds of things I am doing now as a philosopher are very different in nature from the kinds of things I was doing as a biologist.

Discussions of the (arbitrary?) distinction between basic and applied science are often heard in the hall of scientific meetings and at pubs, especially by basic scientists griping that their applied colleagues get a much larger share of federal funding (true) or by applied scientists who grumble that the most recognizable honors and prestigious journals tend to be reserved for the other side (also mostly true). Recently, an op-ed piece in *The New York Times* by Stephen Quake (February 19, 2009) brought the discussion to the attention of the general public. Quake, a professor at Stanford University and an investigator at the Howard Hughes Medical Institute, is a quintessential example of the scientist who straddles both worlds. Perhaps predictably, Quake argues that the basic/applied divide in science is completely spurious, and he lists a num-

Much basic research goes on without any application at all, and much applied science does not depend (other than in a vague and very straightforward manner) on basic research.

Massimo Pigliucci is professor of philosophy at the City University of New York–Lehman College, a fellow of the American Association for the Advancement of Science, and author of Denying Evolution: Creationism, Scientism and the Nature of Science. *His essays can be found at www.rationallyspeaking.org and www.gullibilityisbadforyou.org.*

ber of examples (many from his own research) of basic science leading to unexpected applications or applied efforts catalyzing new basic discoveries.

There is a long tradition of arguing like this: cherry-picking the few anecdotes that best fit the bill. Quake himself, of course, starts out with the archetypal example of Archimedes. Yes, he discovered the basic principle of buoyancy (though stepping into one's bath isn't exactly the sort of research that the National Science Foundation [NSF] would give you money for these days), but his eureka cry referred to an applied problem: he needed to determine whether a jeweler had swindled King Hiero by selling him a crown that was not actually made of solid gold. (It turns out that Hiero had in fact been cheated, though I do not know what the king did to the jeweler after Archimedes exposed the fraud.)

From more modern times, we know the entire field of radioastronomy was made possible by the invention of radar for military purposes, and basic research into the nature of atoms led to the construction (and use) of nuclear weapons during World War II. But for every one of these anecdotes I can marshal hundreds, nay thousands, of examples where there is little to no overlap between basic and applied science. The overwhelming majority of medical research, for instance, feeds on previous medical research and only occasionally gets a boost from new discoveries in molecular or cell biology. Yes, medical scientists need to be knowledgeable about basic notions in those fields (and in genetics, physiology, and anatomy, for that matter), but that isn't the same point that Quake was trying to make.

Conversely, I assure you that the overwhelming majority of grants I see funded by NSF and similar agencies—and correspondingly the greatest number of research projects that are pursued by faculty and graduate students in basic science departments all over the world—have nothing whatsoever to do with applications if one defines an "application" as a result that is directly useful to human welfare. I am not trying to make the point that basic research is uninteresting, nor am I arguing that there is no connection between basic and applied science. Rather, I am cautioning against simplistic scenarios at both extremes of what is a complex, nonlinear, and highly idiosyncratic spectrum: much basic research goes on without any application at all, and much applied science does not depend (other than in a vague and very straightforward manner) on basic research. There is a good reason theoretical physicists and engineers, evolutionary biologists and medical doctors, and mathematicians and software developers work in different places and are funded by different agencies. By all means, let's keep talking to each other and celebrate the occasional crossover, but let's not fool ourselves and the public by selling a view of science that simply doesn't cut nature at its joints. □

POINT OF INQUIRY

Where can you hear the leading voices of skepticism and science on a weekly basis? On POINT OF INQUIRY, the Center for Inquiry's podcast and radio show, which is now one of the most popular science programs online.
Listen for free at **www.pointofinquiry.org** today!

Each week, Point of Inquiry brings you incisive interviews, features, and commentary, focusing on the three research areas of the Center for Inquiry: pseudoscience and the paranormal; alternative medicine; and religion, ethics, and society.

In addition to new shows every Friday, the entire archive of past episodes can be accessed online at www.pointofinquiry.org.

Previous popular guests include:
RICHARD DAWKINS | SAM HARRIS
NEIL DEGRASSE TYSON | ANN DRUYAN
and many more!

WWW.POINTOFINQUIRY.ORG

NASA Tries to Bomb Star Visitors

NASA may have most people convinced that its purpose in crashing the Lunar Crater Observation and Sensing Satellite (LCROSS) into the Moon on October 9, 2009, was to look for ice in a permanently shaded crater near the Moon's south pole. But well-known UFO expert Richard Boylan of Sacramento, California, isn't fooled; he knows that it's "a Cabal project to annihilate a Star Visitor colony living in a crater near the Moon's South Pole." Boylan, a former psychologist who lost his license over allegedly improper behavior, is a board member of a group called The Academy of Clinical Close Encounter Therapists. Boylan not only works with those who believe they are victims of UFO abduction but also detects and counsels "Star Kids" and adult "Star Seeds," people who believe they have special advanced abilities and a special alien mission on Earth. His Web site, www.drboylan.com, helpfully provides a checklist for those who believe that they or their children may be Star-special. Answer "yes" to twenty or more of the questions, and your child is "absolutely a Star Kid."

Boylan explains:

> The Cabal within NASA know that there is a colony of Star Visitors living within Cabeus A Crater. The Cabal's secret objective is to use the LCROSS and attached rocket stage to obliterate the Star Visitor settlement residing within that crater. . . . I note that the Cabal is indeed engaged in unlawful war crimes and attempting to position the United States, and by extension, all Earth nations, in an act of war against star civilizations. Since this is not a true act of the United States Government but a rogue act by Cabal infiltrators within NASA, then the official government of the United States, and by extension the United Nations, would repudiate this action as unlawful once its true intent becomes known.

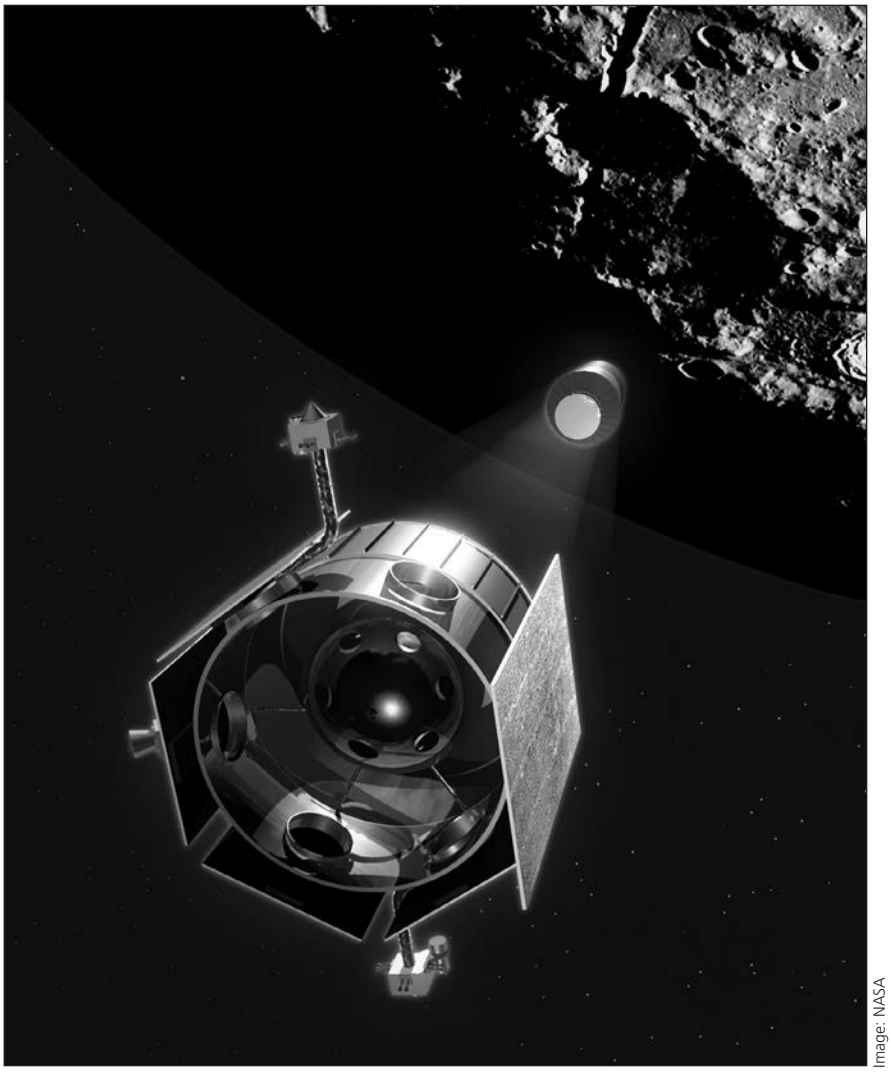


Image: NASA

Robert Sheaffer's "Psychic Vibrations" column has appeared in the SKEPTICAL INQUIRER *for the past thirty years, and he is author of* UFO Sightings: The Evidence *(Prometheus 1998). His Web site is at www.debunker.com.*

To try to head off this disaster, Boylan attempted to send a message through unspecified special channels to warn President Obama and Vice President Biden, "who normally oversees the government's Star Visitors programs." Unfortunately, the message did not get through because it was intercepted by Secretary of State Hillary Clinton, who is a "Cabal asset." So Boylan sent a telepathic message to Star Nations High Council, asking if they would like him to organize a "Joint Psychic Exercise [JPE] to redirect LCROSS and Centaur rocket away from the Moon." Receiving a reply in the affirmative, Boylan announced the following: "Twenty days from now we will engage (along with Star Nations) in a Joint Psychic Exercise to divert the LCROSS space probe and accompanying Centaur rocket away from crashing into the Star Visitors lunar colony within Cabeus A Crater. That Joint Psychic Exercise will take place simultaneously globally on October 8 (the day before supposed impact)."

Boylan called this the "Joint Psychic Exercise to deflect and disintegrate LCROSS space probe and its Centaur booster rocket" and gave the hour in each time zone for his followers to perform their feats of psychic action-at-a-distance.

However, a week before the launch, NASA changed its mind about which crater to impact. NASA scientists decided that the main crater, Cabeas, was more likely to contain significant amounts of water, and they directed LCROSS and its Centaur rocket to the new target. So the energy from the future Joint Psychic Exercise probably went back in time, causing NASA to direct its impact away from the Star Nations visitors. Or else Boylan's urgent message finally got through to Star-Visitor-Overseer Joe Biden, who averted an interplanetary war by moving the LCROSS target. But Boylan himself seems unaware of the retargeting or at least did not mention it on his Web site.

Precisely at the predicted time, the Centaur rocket, followed quickly by LCROSS itself, both undeflected and undisintegrated, slammed into the lunar crater Cabeas at a speed of about 40 km/s. Nonetheless, Boylan proclaimed the exercise a success, claiming that the probe and rocket were "deflected" from the Moon and "disintegrated in space." Boylan explained how he projected himself astrally through time and space and (still apparently unaware of the probes' retargeting) "went out psychically to LCROSS and Centaur booster as they were streaming towards the Moon. Next I enwrapped LCROSS in a telekinetic force and redirected it onto a course to the left so it was aiming towards one Moon-diameter's width left of the Moon's left side. Then the same was done with the Centaur booster rocket." But merely to deflect the objects was not enough:

> I engaged first one, then the other, with strong dissolution energy to unbind the Strong Force bonds holding their atoms together as molecules. [That, however, is an electromagnetic bond, not a nuclear one.] Moving from top to bottom, I un-did the Strong Force bonds, causing the component materials of these space vehicles to come apart at the molecular level. This process also safely dismantled the advanced munitions which were secretly aboard these space vehicles. . . . This was confirmed this morning by Star Nations, whose members were also at work on these two space vehicles during our JPE, to assure thorough deflection and disintegration. Thus the star folks lunar colony within Cabeus A Crater is safe from overhead bombardment.

Perhaps this explains why no ground-based telescopes observed any dust ejected from the collision.

* * *

Attack of the Drones? Starting in 2007, pictures of weird, spindly shaped UFOs started to turn up in UFO Web sites and magazines, usually submitted anonymously. Looking like a cross between a wire basket and a ceiling fan, "drone UFOs" started popping up all over the place.

The first such photos supposedly came from a fellow in Bakersfield, California, known only as "Chad." In May of 2007, he submitted a total of six drone UFO photos to the Coast-to-Coast AM Web site, which posted them. He wrote, "My wife and I were on a walk when we noticed a very large, very strange 'craft' in the sky. . . . The craft is almost completely silent and moves very quickly. . . . I see this thing *very* often. . . . It is almost totally silent but not quite. It makes kind of 'crackling' noises. . . . It moves almost like an insect." The object in the photo had five protruding arms, one much longer than the others.

Before long, a second set of drone UFO photos was allegedly taken at Lake Tahoe near the Nevada-California line, submitted anonymously to the Mutual UFO Network (MUFON) and posted on their Web site. This craft had four arms, two significantly longer than the others. Soon six more anonymous drone photos from Capitola, California, were posted on the Internet by a person calling himself "Rajman." This one had some sort of "alien writing" on it. A few days later, somebody known only as "Stephen" produced three drone photographs supposedly taken at Big Basin Park, not far from Capitola. The object is somewhat distant, and details are hard to see. About ten days later, a guy named "Ty" submitted twelve drone photos, supposedly taken at Big Basin Park the same day as Stephen's and seen by his cycling group. Ty's photos are amazingly close-up, allowing one to see every gear, sprocket, and spike in clear detail. After that, a few more pictures

"I note that the [NASA] Cabal is indeed engaged in unlawful war crimes and attempting to position the United States, and by extension, all Earth nations, in an act of war against star civilizations."
— Richard Boylan

trickled in from here and there, but the fad for photographing drone UFOs seemed to have run its course. Somebody calling himself "Isaac" wrote a letter explaining how he used to work on a classified project called "Caret" that utilized captured alien technology to produce antigravity. He also produced what he purports is a technical manual, portions of it heavily redacted, showing parts that seem to have come from a drone UFO.

In 2008, a woman in London who said she was with the "Open Minds Forum" contacted California private investigator T.K. Davis. She wanted to hire him to find out who photographed the drones, as thus far every photographer has only given a first name. She didn't want to be identified, either. She had emailed Rajman with some questions, but he closed his e-mail account after only a brief reply. So Davis and his colleague Frankie Dixon headed to Capitola to identify the specific telephone pole seen in the photo. The whole affair is starting to sound like a Humphrey Bogart movie.

On September 10, 2009, the *Telegraph* of London published a strange photo with a story titled "UFO or Pterodactyl over Argentinian Lake? A Strange Object Photographed over a Lake in Argentina Has Been Described as Either a Flying Saucer or a Flying Dinosaur." The somewhat blurry photo, taken with a cell phone, shows a round object with five arms or spikes protruding from it, causing anyone who has been watching the carnival described above to immediately exclaim, "It's a drone!" The photo was taken by Rafael Pino (at least this man has a first and last name!) who says he was driving his truck when he spotted the object and stopped to snap three photos. However, one alert reader in Argentina wrote, "It does look like a windshield cracked by a rock." An analysis of these photos on the blog Forgetomori (http://forgetomori.com) suggests that "indeed, the 'UFO' is apparently in the same perspective in all photos, as if it didn't really move. Note that in the second photo, the line of horizon is tilted . . . but the UFO's rightmost 'spike,' which is actually a crack, is still parallel to it. So, a cracked windshield looks like a good and obvious explanation." By the way, there's a lot of interesting investigative material on Forgetomori, whose motto is "Extraordinary Claims, Ordinary Investigations." But many of the investigations seem well beyond the "ordinary," so I suggest you have a look.

Yet another photo of a spiky drone from the Netherlands was quickly identified by several readers as a "Waldorf box kite," which indeed does have the same spiky shape. Of course, the clear and detailed, but anonymous, drone photos from California are not the result of cracked windshields or kites but probably are courtesy of Photoshop or similar software. In fact, some computer graphics whizzes have already produced impressive animated videos of drone UFOs. For one fine example, see the admittedly hoaxed video at www.youtube.com/watch?v=rBEYc5OUUtw. Seeing is no longer believing, if indeed it ever was.

Drone UFO: Photographed or photoshopped?

* * *

Richard H. Hall, a UFOlogist of long standing, passed from the scene after succumbing to cancer on July 17 at the age of seventy-eight. Hall served in the U.S. Air Force and attended Tulane University before taking a job with the National Investigations Committee on Aerial Phenomena (NICAP) in Washington, DC, in 1958. At that time, NICAP was the largest and most influential UFO group in the U.S. Hall eventually became NICAP's assistant director, working under NICAP Director Maj. Donald E. Keyhoe (1897–1988), one of the founding fathers of contemporary UFOlogy, whose sensationalist magazine articles and books, such as *Flying Saucers from Outer Space*, helped create the public's belief in alien visitors.

Hall is best known as the author of *The UFO Evidence* (1964), a compendium of carefully selected best cases in the NICAP files. Upon publication, the book was sent to every member of Congress in hopes of attracting interest in the UFO mystery. When Keyhoe was ousted from NICAP in 1969, Hall followed, leaving full-time UFOlogy to take jobs as a technical writer and editor. He remained active with other UFO groups such as MUFON and the Fund for UFO Research. He also wrote numerous published articles on other subjects, especially Civil War history.

Dick, as he was always known, was a strong supporter of the Extraterrestrial Hypothesis for UFOs and had a reputation for contentiousness. He was often feuding not only with skeptics but with many UFO believers. The few times I met him, Dick was polite but clearly had a very low tolerance for UFO skepticism. Like so many in the UFO field, he believed that the evidence was "out there" for anyone to see if only they would open their eyes. That his *UFO Evidence* falls far short of the requirements of science was something Dick Hall was unable to understand. □

Hyperbaric Therapy for Autism: Airy Promises

Q: With the recent news that autism cases are on the rise, I'm sure the number of dubious "treatments" are increasing as well. Is there any evidence that hyperbaric oxygen chambers can effectively treat autism?

—D. Phillips

A: Autism is indeed a tragic disorder, made worse by the proliferation of promised cures, treatments, and therapies such as chelation therapy and facilitated communication. Among the new therapies are hyperbaric chambers—best known as a treatment for sick divers—which work by forcing oxygen into the body.

Quackwatch.org lists hyperbaric treatment as "doubtful or discredited," and the Autism Science Foundation, a nonprofit organization established to provide scientific information on the disorder, calls hyperbaric treatment a "non-evidence based treatment": "Hyperbaric oxygen therapy (HBOT) is proven effective for gangrene, carbon monoxide poisoning, 'the bends' and various other conditions related to oxygen in blood. There is no evidence that ASD (Autism Spectrum Disorder) is related to insufficient oxygen. There is insufficient evidence to determine if HBOT is safe or effective for the treatment of autism." Indeed, since the causes of autism are unknown, there is no reason to think that hyperbaric therapy even *might* work. Why would boosting the amount of oxygen in the brain have any effect?

Before completely dismissing the possibility of hyperbaric therapy, however, we should take note of one study conducted by Dr. Daniel Rossignol of Florida's International Child Development Resource Center. His team examined fifty-six children between the ages of two and seven, all of whom had some degree of autism. Following forty one-hour treatments in a hyperbaric chamber, almost one-third of the children were reported to have significantly increased functioning.

While the results are interesting, the study had several important limitations, including the very small sample size and the fact that the experiment was not double-blinded, since the childrens' parents, who were the ones rating any improvement in function, knew whether their child had been exposed to the real therapy or not. Furthermore, hyperbaric treatments are expensive; a course of treatments matching those in the study could cost over $30,000.

As dubious as hyperbaric therapy is, it does have one advantage over most other therapies: it is harmless (except, of course, to the pocketbook). Until and unless better-controlled studies are conducted, the efficacy of the therapy remains both unproven and unlikely. □

Image: Wikipedia

The War on Cancer
A Progress Report for Skeptics

Although there has been some progress in the war on cancer initiated by President Nixon in 1971, the gains have been limited.

REYNOLD SPECTOR

In 1971, President Nixon and Congress declared war on cancer. Since then, the federal government has spent well over $105 billion on the effort (Kolata 2009b). What have we gained from that huge investment? David Nathan, a well-known professor and administrator, maintains in his book *The Cancer Treatment Revolution* (2007) that we have made substantial progress. However, he greatly overestimates the potential of the newer so-called "smart drugs." Researchers Psyrri and De Vita (2008) also claim important progress. However, they cherry-pick the cancers with which there has been some progress and do not discuss the failures. Moreover, they only discuss the last decade rather than a more balanced view of 1950 or 1975 to the present.

On the other hand, Gina Kolata pointed out in *The New York Times* that the cancer death rate, adjusted for the size and age of the population, has decreased by only 5 percent since 1950 (Kolata 2009a). She argues that there has been very little overall progress in the war on cancer.

In this article, I will focus on adult cancer, since child cancer makes up less than 1 percent of all cancer diagnosed. I will then place the facts in proper perspective after an overview of the epidemiology, diagnosis, and treatment (especially with smart drugs) of adult cancer in the United States.

The Cancer Facts

Figure 1 shows the ten biggest killers in the United States in 2006. Cancer (23 percent) has almost caught up with heart disease. Figure 2 shows the death rates from cancer in men and women (adjusted for the size and age of the population) since 1975; the cancer death rates have declined in men but not in women. The decline in men is largely due to fewer lung cancer deaths in men due to less smoking (see figure 3). However, there were about 200,000 more deaths from cancer in 2006 than 1975 because of the substantial increase in the U.S. population.

These summary statistics show that the war on cancer has not gone well. This is in marked contrast to death rates from stroke and cardiovascular disease (adjusted for the age and size of the population), which have fallen by 74 percent and 64 percent, respectively, from 1950 through 2006; and by 60 percent and 52 percent, respectively, from 1975 through 2006 (Kolata 2009a). These excellent results against stroke and heart disease are mainly due to improvements in drug therapy, especially the control of high blood pressure to prevent stroke and the use of statins, aspirin, beta blockers, calcium channel blockers, and ACE inhibitors (now all generic) to prevent and treat heart disease. Cancer therapy is clearly decades behind. However, these data conceal a great deal of useful information and do not provide guidance on how to make progress against cancer.

Table 1

Critical Terms Defined in the Text

1) Cancer—three kinds: local, regional, distant (metastatic)
2) Carcinoma (cancer) in situ—e.g., ductal carcinoma of the breast (DCIS)
3) Slow cancers—e.g., prostate, breast
4) Cancer treatments: surgery, chemotherapy, radiation therapy
5) Partial response
6) Complete response
7) Cure
8) Median survival, one/five-year survival

Reynold Spector, MD, has served as a professor of medicine (and pharmacology and biochemistry) at Iowa, Stanford, and Harvard-MIT. Dr. Spector is currently a clinical professor of medicine at Robert Wood Johnson Medical School (New Jersey) and is the author of almost two hundred peer-reviewed scientific papers and one textbook. His award-winning work has principally concerned itself with drug and vitamin function, transport and homeostasis in the central nervous system, the effect of food on the function of the kidney, and treatment of the poisoned patient. Dr. Spector also served at Merck from 1987 to 1999, retiring as executive vice president in charge of drug development. He oversaw the introduction of fifteen new drugs and vaccines, several of which help to prevent cancer.

U.S. Mortality, 2006

Rank	Cause of Death	No. of Deaths	% of All Deaths
1.	Heart Diseases	631,636	26.0
2.	**Cancer**	**559,888**	**23.1**
3.	Cerebrovascular Diseases	137,119	5.7
4.	Chronic Lower Respiratory Diseases	124,583	5.1
5.	Accidents (unintentional injuries)	121,599	5.0
6.	Diabetes Mellitus	72,449	3.0
7.	Alzheimer Disease	72,432	3.0
8.	Influenza & Pneumonia	56,326	2.3
9.	Nephritis*	45,344	1.9
10.	Septicemia	34,234	1.4

*Includes nephrotic syndrome and nephrosis

Sources: U.S. Mortality Data 2006, National Health and Statistics, Centers for Disease Control and Prevention, 2009

Figure 1

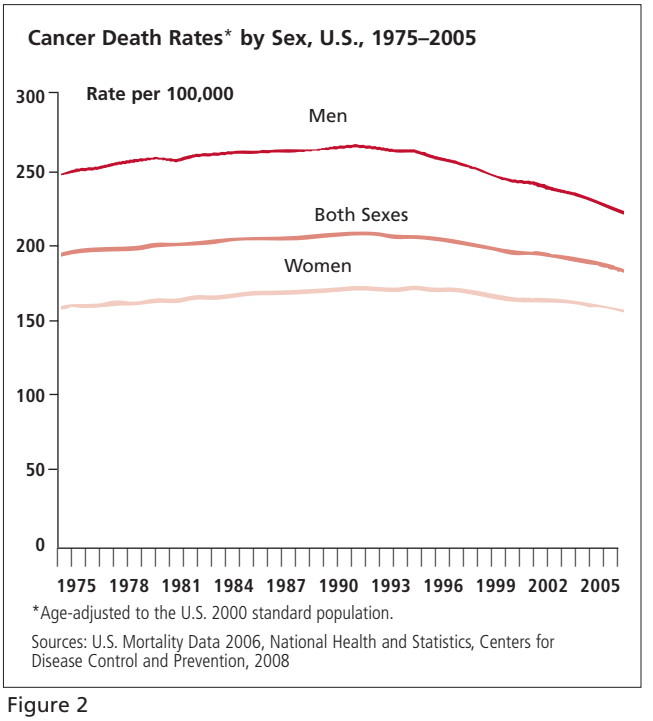


Figure 2

Methodological Issues

To understand the issues, we must describe a few statistical traps and define our terms (see table 1). For example, there are several types of detection bias. First, if one discovers a malignant tumor very early and starts therapy immediately, even if the therapy is worthless, it will appear that the patient lives longer than a second patient (with an identical tumor) treated with another worthless drug if the cancer in the second patient was detected later. Second, detection bias can also occur with small tumors, especially of the breast and prostate, that would not harm the patient if left untreated but can lead to unnecessary and sometimes mutilating therapy. Another type is publication bias, whereby positive studies (especially those funded by the pharmaceutical industry) tend to be published while negative studies do not.

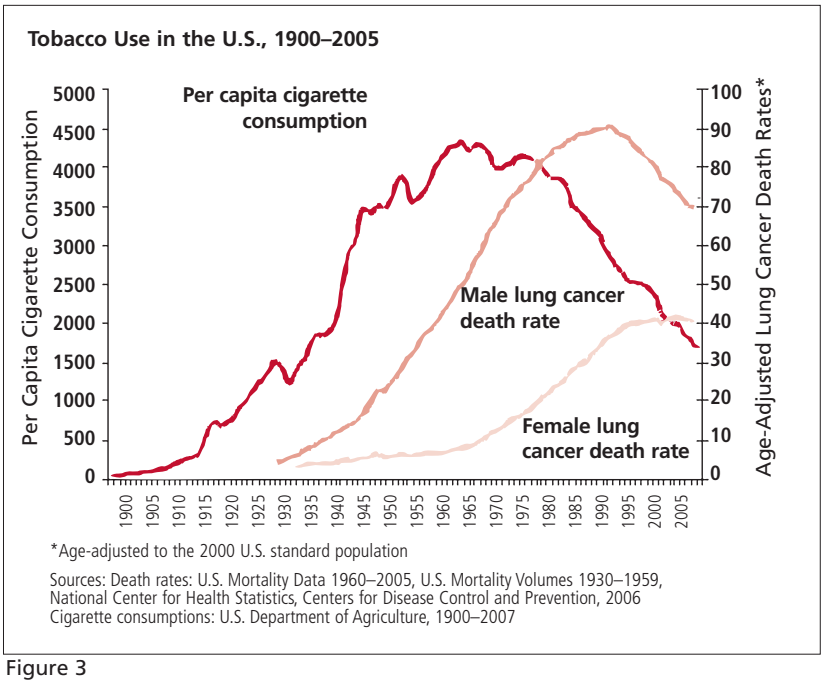


Figure 3

What is cancer? Cancer is a large group of diseases characterized by the uncontrolled growth and spread of abnormal cells locally, regionally, and/or distantly (metastatically) (American Cancer Society 2009). A carcinoma (cancer) in situ is a small cancer that has not invaded the local tissue. Some cancers grow very slowly, and the patient may survive for ten years or more with minimal treatment. Other cancers (e.g., lung and pancreas) grow quickly and, even today, kill more than half of the patients in less than one year (see table 2) (American Cancer Society 2009). The therapy for cancer is generally surgery, if possible, and/or chemotherapy and/or radiation therapy. Chemotherapy aims to kill the cancer cells, but most chemotherapeutic drugs are nonspecific and also kill sensitive normal cells, especially in the intestine and bone marrow. Radiation therapy is also nonspecific. In chemotherapy and radiation therapy, a partial response is defined as shrinkage of the tumor in each

Table 2

Common Cancers

Current Death and Survival Statistics (American Cancer Society 2009)

Cancer Origin	Percent of Cancer Deaths	One-Year Survival (%)	Five-Year Survival (%)
Lung	28	41	15
Colon/Rectum	9	83	64
Breast	8	>95	89
Pancreas	6	24	5
Prostate	5	*	*
Leukemia	4	**	51
Lymphoma	4	82	68
Liver	3	†	<10
Other	33	††	††

*Survival statistics for prostate cancer are very misleading since they include many treated cancers that would not have harmed (or killed) the patient (see text).
**Leukemia is a heterogenous group of diseases. The five-year survival figure is an average of all types.
†Liver cancer is a rapidly fatal disease in which treatment is ineffective.
††Other cancers are so heterogenous that the reader should consult the American Cancer Society (2009) for specific data.

Table 3

Examples of Probable or Definite Causes of Cancer (American Cancer Society 2009)

1) External Factors
   a) Tobacco
   b) Chemicals (e.g., asbestos, benzene, alcohol)
   c) Radiation
   d) Infections, organisms (e.g., hepatitis B, papilloma virus, *Helicobacter*)
   e) Hormone replacement therapy with estrogen

2) Internal Factors
   a) Genetic mutations
      1) inherited
      2) acquired
   b) Hormones (e.g., estrogen)
   c) Immune disorders (e.g., AIDS)
   d) Epigenetic changes
   e) Obesity

dimension by 50 percent; a complete response means no detectable tumor, but this does not necessarily mean a "cure." Many complete responses are only transitory. Median survival is the length of time in which one-half of the patients in a cohort die.

What Do We Know about Cancer?

The "causes" of cancer are shown in table 3 (American Cancer Society 2009), though there is still much we don't know. For example, we do not know exactly how smoking causes cancer; in most cases, we do not know how "acquired" mutations cause cancer. In some cancers, there are more than five hundred identifiable genetic abnormalities—no one knows which one(s), if any, is "causative" (Downing 2009). The importance of epigenetic changes is currently speculative. It is quite possible that there is a completely unknown causal mechanism in many cancers.

The diagnosis of cancer today is relatively straightforward with imaging techniques (x-ray, CAT, MRI, PET) and biopsies that are subjected to routine histology, electron microscopy, and immunological techniques.

Cancer Therapy

To have a reasonable discussion of cancer therapy, we need to agree on the objectives of therapy (Fojo and Grady 2009), as shown in table 4. Everyone agrees that meaningful prolongation of life, preferably complete surgical removal of the tumor and cure, is a high priority. The treatment should also improve the quality of life. But, as is well known, many chemotherapeutic and radiation regimens cause mild to devastating—even fatal—side effects. Nathan (2007) compares conventional chemotherapy to "carpet-bombing," an extreme but realistic metaphor. Finally, the results of a cost-benefit analysis must be reasonable (Fojo and Grady 2009). (In some cases, justifiably and importantly, chemotherapy and/or radiation and/or other drugs are used as palliative measures exclusively to counter symptoms from the disease [e.g., pleural effusions in the chest cavity or bone pain] or from the treatments [e.g., vomiting, mucositis, low white blood counts, heart failure, nerve damage, diarrhea, and/or inflammation of the bladder]). In the final analysis, what counts are the criteria in table 4. Partial or even complete remissions, unless they prolong life and/or improve the overall quality of life at a reasonable cost, are scientifically interesting but of little use to the patient.

Table 4

Criteria for Utility of Cancer Therapy
(Fojo and Grady 2009)

1) Meaningful prolongation of life or cure (mortality)

2) Improvement of quality of life (symptoms)

3) Value of treatment (compared to cost)

Table 5

Bevacizumab (Avastin)—Utility

Cancer	Evidence for Prolongation of life; time*
Bowel/ Rectum	Yes, four months (median survival) with other drugs
Lung	No +
Breast	No
Kidney	No
Glioblastoma (Brain)	No

*Compared to randomized control (if available)
+"No" means a lack of a statistically significant prolongation

Currently there are a few metastatic cancers that can sometimes be cured with chemotherapy and/or radiation therapy, but unfortunately these cures make up a very small percentage of the whole cancer problem. These cancers include testicular cancer, choriocarcinoma, Hodgkin's and non-Hodgkin's lymphoma, leukemia, and rare cases of breast and ovarian cancer. A few cancers can be made into chronic diseases that require daily treatment, e.g., chronic myelogenous leukemia.

Returning to table 2, lung cancer, the most common cancer, is a devastating disease; if the surgeon cannot totally remove it, the diagnosis is grim. In fact, about 60 percent of lung cancer patients are dead within one year of diagnosis with the best available therapy, and only 15 percent survive five years.

There has been some progress in the death rate from colorectal cancer (figures 4 and 5), especially in women. This is mainly due to earlier diagnosis and surgical therapy.

Cancer of the breast is often a slow cancer and has a five- to ten-year median survival rate with just surgical therapy. As can be seen in figure 5, there has been a modest decline in death rates from breast cancer since 1975. It is worth noting that currently, if the breast cancer is metastatic, five-year survival is only 27 percent (American Cancer Society 2009). However, breast cancer presents a serious dilemma. Early detection of invasive breast cancer by screening is good; however, about 62,000 cases of ductal carcinoma in situ (DCIS) are also discovered every year (American Cancer Society 2009). In greater than 50 percent of these women, especially older women, these lesions will not progress and do not need treatment. However, it is difficult to predict who will not need therapy, so the American Cancer Society (2009) recommends all patients with DCIS undergo therapy—generally breast surgery. Thus, more than thirty thousand patents annually are unnecessarily treated (Evans et al. 2009). We need to figure out which DCIS are harmless in order to avoid unnecessary treatment. On balance, I feel that breast cancer screening has a small but positive net benefit (Esserman et al. 2009).

Pancreatic cancer is devastating (see table 2 and figures 4 and 5), and little progress has been made against it since 1975. Pancreatic cancer is very challenging because the tumors are surrounded by dense fibrous connective tissue with few blood vessels (Olson and Hanahan 2009). Because of this, it is difficult to deliver drugs to pancreatic tumors. Moreover, this explains in part why chemotherapy is so ineffective for pan-

creatic cancer (see table 2). Better animal models are needed.

Prostate cancer mortality has declined slightly since 1975 with an unexplained increase in the mid-1990s (see figure 4). But prostate cancer therapy also presents a serious quandary. At autopsy, approximately 30 percent (or more) of men have cancer foci in their prostate glands, yet only 1 to 2 percent of men die of prostate cancer. Thus less than 10 percent of prostate cancer patients require treatment. This presents a serious dilemma: whom should the physician treat? Moreover, recently, two large studies of prostate cancer screening with prostate specific antigen (PSA) have seriously questioned the utility of screening. In one study, the investigators had to screen over a thousand men before they saved one life. This led to about fifty "false positive" patients who often underwent surgery and/or radiation therapy unnecessarily (Schröder et al. 2009). The second study, conducted in the United States, was negative (Andriole et al. 2009), i.e., no lives were saved due to the screening, but many of the screening-positive patients with prostate cancer were treated. Welch and Albertson (2009) and Brawley (2009) estimate that more than a million men in the U.S. have been unnecessarily treated for prostate cancer between 1986 and 2005, due to over-diagnostic PSA screening tests. In the end, screening for prostate cancer will not be useful until methods are developed to determine which prostate cancers detected by screening will harm the patient (Welch and Albertson 2009; Brawley 2009). Many men—especially elderly ones—with a histological diagnosis of prostate cancer elect "watchful waiting" with no therapy, a rational strategy (Esserman et al. 2009).

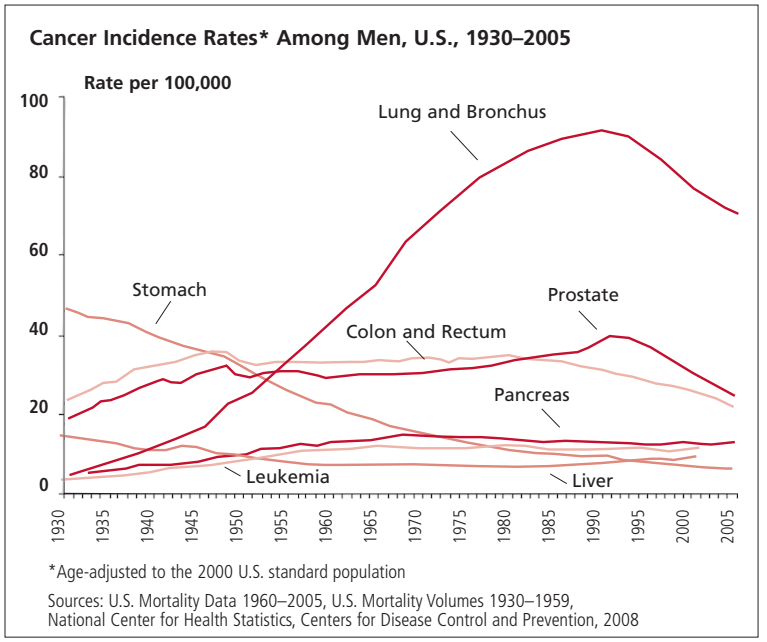


Figure 4

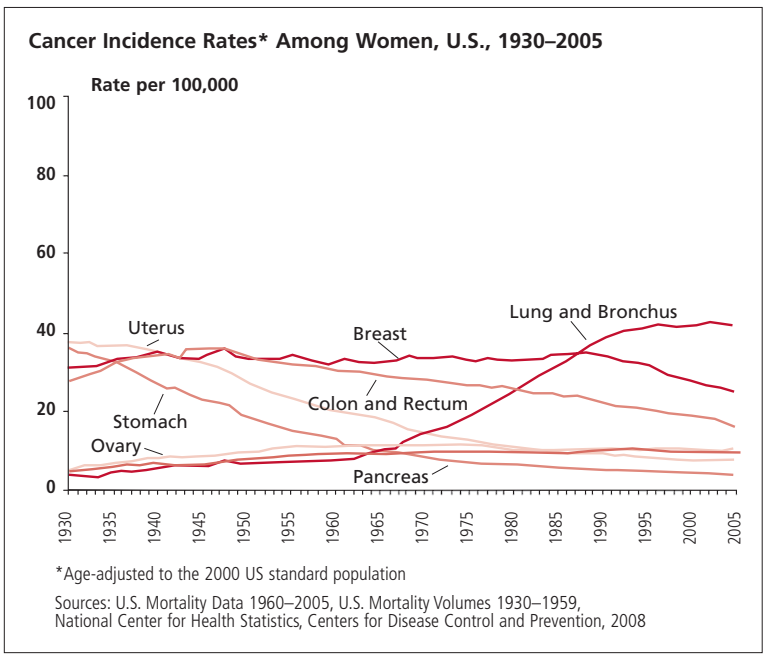


Figure 5

There are many other things we do not understand about cancer—even on a phenomenological level. For example, in the United States, the incidence and death rates from cancer of the stomach have fallen dramatically since 1930 (see figures 4 and 5). The reason for this is unknown but may be due to changes in food preservation; it is not due to treatment.

Smart Drugs

David Nathan (2007) extols the virtues and potential of the new "smart drugs." Smart drugs are defined as drugs that focus on a particular vulnerability of the cancer; they are not generalized but rather specific toxins. But the *Journal of the American Medical Association* (Health Agencies Update 2009) reports that 90 percent of the drugs or biologics approved by the FDA in the past four years for cancer (many of them smart drugs) cost more than $20,000 for twelve weeks of therapy, and many offer a survival benefit of only two months or less (Fojo and Grady 2009). Let us take bevacizumab (Avastin), the ninth largest selling drug in America ($4.8 billion in 2008), costing about $8,000 per month per patient (Keim 2008). Bevacizumab, a putative smart drug, is an intravenous man-made antibody that blocks the action of vascular endothelial growth factor (VEFG). It sometimes works because tumors (and normal tissues) release VEFG to facilitate small blood vessel in-growth into the tumor. These small blood vessels "nourish" the tumor (or normal tissue). The idea is to "starve" the growing tumor with once or twice monthly intravenous injections of bevacizumab.

The FDA has approved bevacizumab for the cancers listed in table 5 (Physicians Desk Reference

[PDR] 2009; Health Agencies Update 2009). Since the median survival of colorectal cancer is eighteen months, bevacizumab therapy would cost about $144,000 (in such a patient) for four months prolongation of survival (Keim 2008). In the other cancers in table 4, there is no prolongation of survival. Moreover, bevacizumab can have terrible side effects, including gastrointestinal perforations, serious bleeding, severe hypertension, clot formation, and delayed wound healing (PDR 2009). By the criteria in table 4, bevacizumab is at best a marginal drug. It only slightly prolongs life, demonstrable only in colorectal cancer, has serious side effects, and is very expensive.

Bevacizumab is frequently cited as an example of the so-called newer smart drugs. But by interfering with small blood vessel growth throughout the body, it is a nonspecific toxin—and hence has serious side effects. It is not so different from the older non-specific chemotherapy.

The use of bevacizumab and similar drugs raises another issue. According to Gina Kolata, 60 to 80 percent of oncologists' revenue comes from infusion of anti-cancer drugs in their offices. Many believe that such economic incentives are the reason for the substantial overuse of expensive chemotherapeutic drugs (Kolata 2009c). However, it is very difficult to document the extent of the overuse of cancer chemotherapy. Does it make sense to employ such expensive drugs that do not prolong life (see table 5) and have such serious side effects (Fojo and Grady 2009)? Moreover, although VEGF and bevacizumab are interesting science, there has been gross exaggeration of bevacizumab's clinical utility in the press (see tables 4 and 5).

So why does the U.S. Food and Drug Administration (FDA) approve bevacizumab (and other drugs) that do not improve longevity and/or the quality of life (see table 5)? The answer is that bevacizumab coupled with other drugs can cause partial remissions, "stabilization" of the cancer, or "lack of progression" for several months. However, this often does not lead to prolongation of life in most of the cancers in table 5. Moreover, many patients pay a heavy price in terms of side effects and cost. It is also worth noting that several European national regulatory authorities do not accept the utility of some of these smart drugs and do not license them for sale in their countries. In agreement with the Europeans, scientists at the U.S. National Cancer Institute are urging the oncology community, regulators, and the public to set limits on the use and pricing of such marginal drugs (Fojo and Grady 2009). They view the current situation as unsustainable.

Table 6

Why Has the War on Cancer Failed?

1) We don't understand the cause/pathogenesis in most cases of cancer—smoking is an obvious phenomenological exception.
2) Most treatments (except surgery) are nonspecific cell killers and not "smart" (Nathan 2007).
3) Clinical trials and the grant system don't foster innovation—need reform (Kolata 2009c).
4) Screening for useful drugs against cancer cells has not worked.
5) Animal models of cancer are often inadequate—e.g., pancreatic cancer as described in this article (Olson and Hanahan 2009).
6) Unproductive "fads" in research come and go.

Table 7

The Way Forward

1) Prevention (cancer prevented)
   a. Stop smoking (lung; others) (see figure 3)
   b. Minimize hormone replacement therapy (breast)
   c. Vaccines
      1) Hepatitis B (liver)
      2) Papilloma virus (cervical, anal, penis)
   d. Eliminate *Helicobacter* with antibiotics (stomach)
   e. Prevent contracting AIDS (sarcoma)
   f. Chemoprophylaxis
      3) finasteride (prostate)
      4) tamoxifen (high risk breast)
   g. Decrease alcohol (liver, esophagus)
   h. Decrease obesity (many types)
2) Screening for
   a. Cervical cancer
   b. Colorectal cancer
   c. Breast cancer
3) More knowledge of cancers' causes and better animal models
4) Better drugs—once appropriate targets identified

Why Has the War on Cancer Failed?

As documented above, unlike the successes against heart disease and stroke, the war on cancer, after almost forty years, must be deemed a failure with a few notable exceptions (Watson 2009). Why? Is it because cancer is an incredibly tough problem, or are there other explanations? In table 6, I have listed six reasons for the failure, although there is little doubt that effective, safe therapy of the various cancers is a difficult problem.

Where Should We Go from Here?

In my view the principal problem is that we just do not understand the causes of most cancers. We don't even know if the problem is genetic or epigenetic or something totally unknown. In theory, problems 2 through 6 in table 6 are all correctable with political and scientific will and more knowledge. Even though we know cancer of the lung is caused by cigarette smoking, we do not know the mechanism, and (except for surgery) we do not know how to meaningfully intervene (see table 2). The pharmaceutical industry cannot

make real progress until we understand the mechanisms and molecular causes of cancer so that industrial, academic, and governmental scientists have rational targets for intervention. We will make no progress if there are five hundred or more genetic abnormalities in a single cancer cell. Where would one begin?

What Should We Do Now?

We can still do a lot even today (see table 7). Smoking and hormone replacement therapy are a cause of lung and breast cancer, respectively, and should be stopped or minimized. For hepatitis B (which causes over 50 percent of liver cancer) (Chang et al. 2009) and papilloma virus (which causes almost all cervical cancer and some anal and mouth cancers), we can vaccinate with vaccines that are essentially 100 percent effective. *Helicobacter* (the probable cause of some stomach cancer) can be easily eliminated with antibiotics. Prophylactic finasteride and tamoxifen (both generic) can decrease prostate and breast cancer, respectively (in high risk patients). We must also decrease alcohol intake (liver and esophageal cancer) and obesity. Obesity is associated with increased cancer risk but the mechanism, if causal, is obscure (Dobson 2009).

The pharmaceutical industry cannot make real progress until we understand the mechanisms and molecular causes of cancer so that industrial, academic, and governmental scientists have rational targets for intervention.

We can screen for cervical, colorectal, and breast cancer, although the value of breast cancer screening is not clear (due to overdiagnosis), as I discussed above (Singer 2009). However, in my view, the benefit of breast cancer screening slightly outweighs the harm. For example, if DCIS treatment could be rationalized and provided only to those who need it, breast cancer screening would then be unarguably useful. All attempts to screen for lung cancer, even in smokers, have so far been futile (Infante et al. 2009).

If all these recommendations were followed, we could cut cancer deaths in half. Moreover, with better mechanistic understanding of cancer, we could make truly "smart" drugs, as has been done in recent years for atherosclerosis (heart attacks), hypertension (strokes), gastrointestinal diseases (ulcers), and AIDS—with truly remarkable results. Let us hope cancer is next. □

Acknowledgments

I wish to thank Michiko Spector for her help in preparation of this manuscript and Dr. June Spector for her critical reading of the manuscript.

References

American Cancer Society. 2009. Cancer Facts and Figures 2009. p.1–38.

Andriole, G.L., R.L. Grubb III, S.S. Buys, et al. 2009. Mortality results from a randomized prostate-cancer screening trial. *New England Journal of Medicine* 360: 1310–1319.

Brawley, O.W. 2009. Prostate cancer screening: Is this a teachable moment? *Journal of the National Cancer Institute* 101: 1295–1297.

Chang, M-H, S-L You, and C-J Chen, et al. 2009. Decreased incidence of hepatocellular carcinoma in hepatitis B vaccinees: A 20-year follow-up study. *Journal of the National Cancer Institute* 101: 1348–1355.

Dobson, R. 2009. Obesity is risk factor in 70,000 European cases of cancer a year. *British Medical Journal* 39: 316.

Downing, J.R. 2009. Cancer genomes—continuing progress. *New England Journal of Medicine* 361: 1111–1112.

Esserman, L., Y. Shieh, and I. Thompson. 2009. Rethinking screening for breast and prostate cancer. *Journal of the American Medical Association* 302: 1685–1692.

Evans, A., E. Cornford, and J. James. 2009. Overdiagnosis of breast cancer. *British Medical Journal* 339: b3256.

Fojo, T., and C. Grady. 2009. How much is life worth: Cetuximab, non-small cell lung cancer, and the $440 billion question. *Journal of the National Cancer Institute* 101: 1044–1048.

Health Agencies Update. 2009. *Journal of the American Medical Association* 302: 838.

Infante, M., S. Cavuto, F.R. Lutman, et al. 2009. A randomized study of lung cancer screening with spiral computed tomography. *American Journal of Respiratory Critical Care Medicene* 180: 445–453.

Keim, B. 2008. Wired.com, February 28.

Kolata, G. 2009a. In long drive to cure cancer, advances have been elusive. *The New York Times*, April 24.

———. 2009b. Playing it safe in cancer research. *The New York Times*, June 28.

———. 2009c. Lack of study volunteers is said to hobble fight against cancer. *The New York Times*, August 3.

Nathan, D.G. 2007. *The Cancer Treatment Revolution.* Hoboken, NJ: John Wiley and Sons, Inc.

Olson, P., and D. Hanahan. 2009. Breaching the cancer fortress. *Science* 324: 1400–1401.

Physicians Desk Reference. 2009. Montvale, NJ: Thomson Reuters.

Psyrri, A., and V.T. DeVita. 2008. The impact of research on the cancer problem: Looking back, moving forward. In: *Everyone's Guide to Cancer Therapy* (5th ed.), 349–359. Kansas City: Andrews McMeel Publishing.

Schröder, F.H., J. Hugosson, M.J. Roobol, et al. 2009. Screening and prostate-cancer mortality in a randomized European study. *New England Journal of Medicine* 360: 1320–1328.

Singer, N. 2009. In push for cancer screening, limited benefits. *The New York Times*, July 17.

Watson, J. 2009. To fight cancer, know the enemy. *The New York Times*, August 6.

Welch, H.G., and P.C. Albertson. 2009. Prostate cancer diagnosis and treatment after introduction of prostate-specific antigen screening: 1986–2005. *Journal of the National Cancer Institute* 101: 1325–1329.

COMMENT:
An Oncologist's View from the Trenches

FA-CHYI LEE

Dr. Spector's article is mostly right. In a sense, looking at cancer treatment from a large scale—looking at the whole nation or the whole world—the overall progress is minimal. However, from a personal perspective, the difference is noticeable.

As I can tell, Dr. Spector is not an oncologist. My view of effective treatment in cancer is not necessarily a cure or prolonged survival.

I have patients with very symptomatic cancer, who are not able to swallow from esophageal cancer, not able to chew due to head and neck cancer, not able to ambulate due to diffuse bone pain from multiple myeloma or prostate cancer, not able to speak or move one of their limbs due to a brain tumor, not able to breathe due to lung cancer. Many of those patients improved with treatment—they are swallowing better, walking into the clinic on their own, able to chew and enjoy food, and able to greet me or shake hands with me due to treatment of their brain tumor. I know treatments may not extend the life expectancy of many of these patients, but I know that when their tumors were responding to treatments, their lives were improved. These are gratifying experiences for physicians treating cancer patients.

Patients with metastatic colorectal cancer used to succumb to their disease within a few months when I was a fellow at UCLA. Now I expect these patients to live about two years. Patients with chronic myeloid leukemia used to expire within a few short years. Now I do not know how long they are going to live.

Then there are patients who beat all the odds and survive. I treated a retired chemistry professor with stage IIIB lung cancer in 1999. The median survival for patients with his stage of disease is only about ten months. He is still alive today and doing very well. Years ago, I had a patient with diffuse metastatic disease from his lung cancer. He did not respond well to chemotherapy, and I discussed his poor prognosis with him. He decided to go into hospice care but his wife asked me to give him something for his appetite. I prescribed thalidomide for him. Almost three months later, his name showed up on my clinic schedule list and I thought someone had made a mistake. He walked into clinic looking so well that I was the one in shock. He continued to do very well for almost two more years on thalidomide before the disease finally returned and killed him. He had a good life.

I had a patient with a brain tumor whose daughter is now a fellow in the division of hematology/oncology. He responded to temozolomide so well that he recovered his ability to speak and walk and was able to make many trips to Las Vegas just for fun. I believe his disease finally recurred almost two years into treatment. He had a good life.

I am still following a young woman, now age twenty-seven, with metastatic rectal cancer. She had many treatments. Concurrent chemoradiation followed by surgery for primary rectal cancer, then metastatic liver lesion, then radiofrequency to another liver lesion. Her boyfriend left her, and she went into a deep depression. This all happened within the first year of diagnosis. She is now almost three years out from the initial diagnosis with no detectable recurrence. She is doing well. There are many other similar personal stories, and that is the reason why I can continue doing my job.

As an oncologist treating all walks of life, every patient is a book to read and an adventure we share. Most of my patients have died, but many of them had a good, enjoyable life before the end. Some are particularly memorable. The progress I have experienced the past twelve years, as a foot soldier constantly standing at the front line fighting cancer one patient at a time, is very rewarding.

Unfortunately, a rewarding personal experience does not translate into a global improvement in cancer care. From a health policy point, the improvement in cancer treatment outcome versus cost is hard to justify. But I also have no doubt that many of my patients benefited from treatments; they did not necessarily live longer, but they lived better for the time they had.

There are some points where I think Dr. Spector is not correct. For example, we do not know if tomixifen really prevents breast cancer. It may only delay the development of breast cancer. We also do not know if estrogen replacement therapy causes breast cancer. The general thinking is that estrogen may not cause breast cancer but simply promote the growth of a small breast cancer. One interesting thing Dr. Spector did not mention is that women with a background of using estrogen who develop breast cancer seem to live longer, or survive longer, with their breast cancer than those women with breast cancer who have never used estrogen.

These are just some of my thoughts. □

Fa-Chyi Lee, MD, is associate professor of medicine at the University of New Mexico Health Sciences Center, Division of Hematology/Oncology, Albuquerque, NM, and an oncologist in the UNM Cancer Research and Treatment Center.

The One True Cause of All Disease

Alternative practitioners constantly claim that conventional medicine treats only symptoms while they treat underlying causes. They've got it backwards.

HARRIET HALL

Chiropractors, homeopaths, naturopaths, acupuncturists, and other alternative medicine practitioners constantly criticize conventional medicine for "only treating the symptoms," while alternative medicine allegedly treats "the underlying causes" of disease.

Nope. Not true. Exactly backwards. Think about it: When you go to a doctor with a fever, does he just treat the symptom? No, he tries to figure out what's causing the fever. If it's pneumonia, he identifies which microbe is responsible and gives you the right drugs to treat that particular infection. If you have abdominal pain, does the doctor just give you narcotics to treat the symptom of pain? No, he tries to figure out what's causing the pain. If he determines you have

acute appendicitis, he operates to remove your appendix.

I guess what they're trying to say is that something must have been wrong in the first place to allow the disease to develop. But they don't have any better insight into what that something might be than scientific medicine. All they have is wild, imaginative guesses. And they all disagree with one another. The chiropractor says that if your spine is in proper alignment, you can't get sick. Acupuncturists talk about the proper flow of *qi* through the meridians. Energy medicine practitioners talk about disturbances in energy fields. Nutrition faddists claim that people who eat right won't get sick. None of them can produce any evidence to support these claims. No alternative medicine has been scientifically shown to prevent disease or cure it. If it had, it would have been incorporated into conventional medicine and would no longer be "alternative."

What if a doctor used one treatment for everything? You have pneumonia? Here's some penicillin. You have a broken leg? Here's some penicillin.

Are these practitioners treating the underlying cause, or are they simply applying their one chosen tool to treat everything? Chiropractors treat every patient with chiropractic adjustments. What if a doctor used one treatment for everything? You have pneumonia? Here's some penicillin. You have a broken leg? Here's some penicillin. You have diabetes? Here's some penicillin. Acupuncturists only know to stick needles in people. Homeopaths only know to give out ridiculously high dilutions that amount to nothing but water. Therapeutic touch practitioners only know to smooth out the wrinkles in imaginary energy fields. They are not trying to determine any underlying cause; they are just using one treatment indiscriminately.

How do you define "cause"? We don't know what causes gravity, but we understand enough about how it works to overcome it with elevators, airplanes, and rockets to the moon. We may not know what ultimately causes asthma, but we know enough about the causes of airway constriction and inflammation to devise effective treatments.

Let's take a simple example: strep throat. The symptom is throat pain. Doctors don't just treat the pain; they do a throat culture, they determine that a strep infection is causing the pain, and they treat the infection with an antibiotic. But what caused the strep infection? The body had to host the bacteria and respond to their presence by developing symptoms; the bacteria had to be capable of multiplying in the human body. The patient had to be exposed to another person who had a strep infection, who in turn had caught it from someone else, involving a chain of social and epidemiologic causes. The bacteria had to evolve from ancestor bacteria and the human from ancestor animals. And so on.

So you see, it involves a chain of causation and there can even be several simultaneous causes. "Cause" can mean pretty much anything you want it to. But however you look at it, doctors definitely do not "just treat symptoms."

Philosophy has studied causation. Aristotle said everything had four causes: material, formal, efficient, and final. And he introduced complications: proper (prior) causation and accidental (chance) causation. Potential or actual, particular or generic. Reciprocal or circular causality as a relation of mutual dependence or influence of cause upon effect. The same thing as the cause of contrary effects when its presence and absence result in different outcomes. He recognized that the subject of causation was complicated.

Alternative providers are more "simple" minded. They often claim to know the one true cause of all disease, which is curious because medical science defines several categories of causes falling under the mnemonic VINDICATE:

V – Vascular

I – Infectious/inflammatory

N – Neoplastic

D – Drugs/toxins

I – Intervention/iatrogenic

C – Congenital/developmental

A – Autoimmune

T – Trauma

E – Endocrine/metabolic

And sometimes more than one cause is involved (e.g., a traumatic injury gets infected). Where science finds complexity, alternative medicine imagines simplicity. As H.L. Mencken said, "For every complex problem, there is an answer that is clear, simple—and wrong."

Some homeopaths claim to treat "genetic" illness, tracing its origins to six main genetic causes: tuberculosis, syphilis, gonorrhea, psora (scabies), cancer, and leprosy. Bet you didn't know tuberculosis was genetic! Neither did I. Science classifies all these as infectious except for cancer, which is neoplastic. Homeopathy disregards science and redefines *genetic* to suit its own inscrutable purposes.

Science finds many causes for disease and sometimes more than one cause for a given disease. Pseudoscience has identified the one true cause of all disease—many times. I did an Internet search and found sixty-seven single causes of all disease (see accompanying box). This is not an exhaustive list but rather an exhausted list (I stopped when I got tired of searching).

It never seems to bother proponents of alternative medicine that others have found different "one true" causes. In his book

Harriet Hall is a retired physician. Also known as The SkepDoc, she is one of five MD founders of the Science-Based Medicine blog. She is a SKEPTICAL INQUIRER contributing editor. Visit her Web site at www.skepdoc.info and reach her by e-mail at harriet.hall @comcast.net.

Internet Search Results for the One True Cause of Disease

Toxemia

Subluxations

Oxygen deficiency

"Fearful, tight and negative minds"

Obstruction of ch'i along the meridians

Refined sugar

"Fault of awareness"

Grains in the diet

False beliefs and fears

"Imbalance"

Ama due to aggravated doshas

Stress

Modern medicine

Arrogance

A "non-perceivable but very real attachment to the material aspect of creation"

Inadequate nutrition

A congested colon

"All disease is a learned experience which we can un-learn."

Spiritual vital force and its dynamic derangement

Holding on to energy within the physical, emotional and spiritual bodies that is not in harmony with us

Impairment of movement of the bones of the skull

Nerves too tense or too slack

God

Lack of life

Witchcraft

Poor sanitation

A shock experience that catches us completely off guard

Cellular memories

Poor digestion

Weak digestive fire

Exogenous toxins

An unbalanced lifestyle

A weak "immine" system

Malnutrition

Free radicals

An imbalance of electrons in the cellular atoms

Our inability to adapt

Food abuse

Allergies

Ignorance of reality

Dis-ease on any level (physical, emotional, mental, soul, or spiritual) is incorrect vibratory rate(s), patterns which are not appropriate, or blocked energy pathway(s) within or between the various levels of existence

The blood

Morbid humors

Emotional trauma

Toxic metals

Cold

Blocked nerves

Sin

Overeating

Food acidity

Violation of natural law

And my favorite: "the United KKK States of America is the root cause of all disease . . ."

Voodoo Science, Bob Park describes a press conference following a meeting to discuss government funding for alternative medicine research:

> Perhaps the strangest part of the press conference consisted of brief statements by individual members of the editorial review board of what they saw as the most important issues for the Office of Alternative Medicine. One insisted that the number-one health problem in the United States is magnesium deficiency; another was convinced that the expanded use of acupuncture could revolutionize medicine; and so it went around the table, with each touting his or her preferred therapy. But there was no sense of conflict or rivalry. As each spoke, the others would nod in agreement. The purpose of the OAM, I began to realize, was to demonstrate that these disparate therapies all work. It was my first glimpse of what holds alternative medicine together: there is no internal dissent in a community that feels itself besieged from the outside.

When scientists encounter two mutually exclusive claims, it bothers them. They experience cognitive dissonance and try diligently to find evidence to reject one of the hypotheses and leave a winner. They eventually reach a consensus. Alternative medicine pseudoscientists don't seem to mind cognitive dissonance. They are content to look for evidence to support their own chosen treatment while blithely disregarding competing claims. They don't want to look for evidence that something *doesn't* work. While each claims to know the *one cause of disease*, they don't seem interested in looking for the *one truth*.

Live and let live? Create your own reality? Truth is only relative? The same thing may be simultaneously true for me and false for you? Maybe it boils down to a mutual tolerance of delusions (okay, I'll believe that you are Jesus if you believe that I'm Napoleon). For the cynical, follow the money: "I won't interfere with your livelihood if you don't interfere with mine."

I can play the cause-finding game too. I've discovered the one cause of all the one-cause theories: a deficiency of critical-thinking skills combined with an overactive imagination. And, of course, a failure to test beliefs using the scientific method. □

'Heads I Win, Tails You Lose'

How Parapsychologists Nullify Null Results

Parapsychologists have tended to view positive results as supportive of the psi hypothesis while ensuring that null results don't count as evidence against it. Here's how this self-deceptive process works and four suggestions to overcome it.

RICHARD WISEMAN

After more than sixty years of experimentation, researchers have failed to reach a consensus about the existence of psi (psychic ability). Some argue that there exists overwhelming evidence either for or against the psi hypothesis, while others believe that it simply isn't possible to answer the question one way or the other. One of the main obstacles to closure on the psi question involves the way in which null results are viewed (Alcock 2003). Many parapsychologists have adopted a "heads I win, tails you lose" approach to their work, viewing positive results as supportive of the psi hypothesis while ensuring that null results do not count as evidence against it.

Cherry-Picking New Procedures

Parapsychologists frequently create and test new experimental procedures in an attempt to produce laboratory evidence for psi. Most of these studies do not yield significant results. However, rather than being seen as evidence against the existence of psychic ability, such null findings are usually attributed to the experiment being carried out under conditions that are not psi-conducive. They are either never published (the "filedrawer effect," see Douglas M. Stokes, "The Shrinking Filedrawer," SI, May/June 2001) or are quietly forgotten even if they make it into a journal or conference proceeding. Once in a while one of these studies produces significant results. Such studies frequently contain potential methodological artifacts, in part because they are using new procedures that have yet to be scrutinized by the research community. In addition, the evidential status of these positive findings is problematic to judge because they have emerged from a mass of nonsignificant studies. Nevertheless, they are more likely than nonsignificant studies to be presented at a conference or published in a journal, usually viewed by proponents as tentative evidence for psi, acting as a catalyst for further work.

To my knowledge, only one paper has revealed an insight into the potential scale of this problem. Watt (2006) summarized all of the psi-related final-year undergraduate projects that have been supervised by staff at Edinburgh University's Koestler Parapsychology Unit between 1987 and 2007. Watt tracked down thirty-eight projects, twenty-seven of which predicted overall significant performance on a psi task with the remainder predicting significant differences between experimental conditions. The work examined a range of new and established procedures, including, for example, dowsing for a hidden penny, the psychokinetic control of a visual display of a balloon being driven by a fan onto spikes, presentiment of photographs depicting emotional facial expressions, detecting the emotional state of a sender in a telepathy experiment, ganzfeld studies, and card guessing. Interestingly, Watt's paper also demonstrated a reporting bias. Only seven of the thirty-eight studies had made it into the public domain, presented as papers at conferences held by the Parapsychological Association. All of these papers had predicted overall significant performance on the psi task. There was a strong tendency for parapsychologists to make public those studies that had obtained positive findings, with just over 70 percent (five out of seven) of the studies presented at conferences showing an overall significant result, versus just 15 percent (three out of twenty) of those that remained unreported. Watt's analysis, although informative, underestimates the total number of psi-related studies undertaken at Edinburgh University because it did not include projects undertaken by students prior to their final year, experiments run by postgraduate students and staff, or any work conducted before 1987. Multiply these figures by the number of parapsychologists who have conducted and supervised psi research across the world over the last sixty years or so, and the scale of the issue becomes apparent.

Richard Wiseman is a professor in the Psychology Department at the University of Hertfordshire, U.K. Visit his Web site at www.richardwiseman.com and contact him at r.wiseman@herts.ac.uk.

Explain Away Unsuccessful Attempted Replications

If a procedure seems to yield significant psi effects, additional follow-up studies using that procedure are conducted. Although these additional studies occasionally take the form of strict replications, they usually involve some form of variation. If these follow-up studies obtain significant results, they are often the subject of considerable debate: proponents argue that the findings represent evidence of psi, and skeptics scrutinize the work for possible methodological and statistical shortcomings. However, any failure to replicate can be attributed to the procedural modifications rather than to the nonexistence of psi. Perhaps the most far-reaching version of this "get out of a null effect free" card involves an appeal to the "experimenter effect," wherein any negative findings are attributed to the psi-inhibited nature of the parapsychologist running the study.

Perhaps the most far-reaching version of this "get out of a null effect free" card involves an appeal to the "experimenter effect," wherein any negative findings are attributed to the psi-inhibited nature of the parapsychologist running the study.

This nullifying of null findings permeates parapsychological literature. For example, Kanthamani and Broughton (1994) report a large-scale attempt to replicate the alleged ganzfeld telepathy effect, wherein one participant (referred to as a receiver) experiences a mild form of sensory deprivation and is then asked to identify a target being viewed by another person (a sender) in a distant location. Parapsychologists have employed various types of targets in these experiments, including photographs and drawings (static targets) and video clips (dynamic targets). In the studies described by Kanthamani and Broughton, the target material consisted of randomly chosen pictures (mainly postcard-sized art prints). The project involved a huge amount of work: researchers ran a series of experiments over a six-year period and conducted more than 350 individual ganzfeld sessions. The studies yielded a nonsignificant cumulative effect. However, Kanthamani and Broughton spent no time discussing whether this null finding might act as evidence against the psi hypothesis and instead simply concluded that "it is probably safe to say that static picture targets remain a less than ideal choice for ganzfeld experiments."

Once again, this process represents the "heads I win, tails you lose" principle. Successful replications are seen as evidence

of psi, while null results are attributed to the non-psi-conducive conditions under which the replication was carried out.

Data Mining

In addition to explaining away null findings via allegedly failed procedural modifications, some parapsychologists also adopt an "any anomaly will do" attitude and data mine in an attempt to produce some kind of psi-related result. Although such post hoc data mining might help guide future work, it has little if any evidential value. Nevertheless, parapsychologists often present it as tentative evidence in support of the psi hypothesis.

Willin's (1996) description of his ganzfeld psi studies presents a striking example of this process at work. Willin conducted one hundred ganzfeld sessions over a fifteen-month period, taking the unusual step of using musical clips as targets. The study obtained a nonsignificant result. However, rather than explore whether this null finding counts as evidence against the psi hypothesis, Willin conducted a series of post hoc analyses, exploring, for example, the relationship between participants' psi scores and their age, profession, hobbies, previous paranormal experiences, and relationship with the person acting as the sender. Additional analyses explored psi scoring as a function of the month and time of day each trial was conducted. Most of these analyses yielded inconclusive results, but Willin eventually found that trials conducted early in the experiment obtained a higher hit rate than those conducted later and suggested that this might have been due to "less interest being shown by the Receivers and the Senders or by an unintentional goat effect being displayed by the Experimenter."

In addition to explaining away null findings via allegedly failed procedural modifications, some parapsychologists also adopt an "any anomaly will do" attitude and data mine in an attempt to produce some kind of psi-related result.

This type of data mining again shows the "heads I win, tails you lose" principle in action, with any null effects being nullified by the apparent discovery of post hoc findings.

Meta-Analyses and Retrospective Data Selection

After several studies have been conducted using a new procedure, parapsychologists usually carry out some form of meta-analytic review of the work. If the combined outcome of the studies is significant, the meta-analysis is usually the subject of considerable debate, with proponents believing that the finding represents evidence of psi and skeptics arguing that it may have a normal explanation (including, for example, publication bias, inappropriate inclusion criteria, and poor methodology). However, if the cumulative effect is nonsignificant, parapsychologists often attribute this null effect to the non-psi-conducive procedural variations described in the preceding section.

Perhaps more important, the procedurally heterogeneous collection of studies usually presents parapsychologists with an opportunity to "explain away" overall null effects by retrospectively identifying a subset of studies that used a certain procedure and yielded a significant cumulative effect.

A striking illustration of this occurred in the late 1990s during a meta-analytic debate surrounding the ganzfeld psi studies. In 1999, Milton and Wiseman published a meta-analysis of all ganzfeld studies that were begun after 1987 and published by the start of 1997, and they noted that the cumulative effect was both small and nonsignificant (Milton and Wiseman 1999). Some parapsychologists criticized this analysis, arguing that they had included all of the ganzfeld studies conducted during this period and that they should have instead focused on those that had employed a "standard" procedure developed by parapsychologist Charles Honorton and his colleagues during a seminal set of ganzfeld studies conducted at the Psychophysical Research Laboratory (PRL) in the late 1980s. The difficulties with this approach became clear when researchers were unable to settle on what would constitute a "standard" set of procedures (Schmeidler and Edge 1999). Eventually, Bem, Palmer, and Broughton (2001) set out to tackle this issue experimentally, asking several people to rate the degree to which the studies in our analysis had employed Honorton's "standard" ganzfeld procedure and then correlating their ratings against the effect size of each study. Rather than provide their own description of this "standard" procedure, Bem, Palmer, and Broughton had the raters read relevant sections in two previous papers describing the PRL studies. However, they also added a series of additional conditions, informing their raters, for example:

> You should treat as standard the use of artistic or creative subject samples (as one of the most successful components of the PRL experiments used such a sample) or subjects having had previous psi experiences or having practiced a mental discipline such as meditation (as such subjects were shown to be the best scorers in the PRL experiments).

The addition of participant selection as an allegedly "standard" condition was not mentioned in the method section of either of the papers describing the PRL work. As such, it could be seen as an excellent example of retrospective data fitting, wherein parapsychologists decide which studies to analyze (or, in this instance, the weight assigned to them) on the basis of their known outcome.

Once again, it's the "heads I win, tails you lose" principle. A significant overall effect is seen as evidence for psi while a null effect initiates post hoc searching for pockets of significance.

Decline Effects and Jumping Ship

The alleged psi effects associated with a certain procedure frequently have a curious habit of fading over the course of

repeated experimentation. Skeptics argue that this is due to the parapsychologists identifying and minimizing potential methodological and statistical flaws over time. However, some parapsychologists have come up with creative ways of explaining away this potential threat, arguing that such decline effects are either an inherent property of psi or that psychic ability really does exist but is inversely related to the level of experimental controls employed in a study (see Kennedy 2003 for a review of this approach).

The decrease in alleged psi often causes some parapsychologists to abandon ship in search of a new procedure, placing them back at square one, ready to repeat history. This is not a new observation. For example, writing over thirty years ago, parapsychologist Joseph Gaither Pratt noted:

> One could almost pick a date at random since 1882 and find in the literature that someone somewhere had recently obtained results described in terms implying that others should be able to confirm the findings. . . . One after another, however, the specific ways of working used in these initially successful psi projects have fallen out of favor and faded from the research scene—except for the latest investigations which, one may reasonably suppose, have not yet had enough time to falter and fade away as others before them have done. (Pratt 1978)

This constant "ship jumping" is one of the defining features of psi research, with new paradigms emerging every decade or so. Take, for example, the different trends in ESP research that have emerged over the years. Initial work, conducted between the early 1930s and late 1950s, primarily involved card guessing experiments in which people were asked to guess the identity of specially printed playing cards carrying one of five simple symbols. By the mid-1960s parapsychologists had realized that such studies were problematic to replicate and so turned their attention to dream telepathy and the possibility of participants predicting the outcome of targets selected by machines. In the mid 1970s and early 1980s, the ganzfeld experiments and remote viewing took over as dominant paradigms. In 1987, a major review of the area by parapsychologists K. Ramakrishna Rao and John Palmer argued that two sets of ESP studies provided the best evidence for the replicability of psi: the ganzfeld experiments and the differential ESP effect (wherein participants apparently score above chance in one condition of an experiment and below chance in another). More recently, parapsychologists have shifted their attention to alleged presentiment effects, wherein participants appear to be responding to stimuli before they are presented. Finally, there are now signs that the next new procedure is likely to adopt a neuropsychological perspective, focusing on EEG measurements or functional MRI scans as people complete psi tasks.

Conclusion

Parapsychologists have tended to adopt a "heads I win, tails you lose" approach to their work, viewing positive results as supportive of the psi hypothesis while ensuring that null results do not count as evidence against it. This involves cherry-picking new procedures from a mass of chance results, varying any allegedly "successful" procedures and then blaming these variations for any lack of replication, searching for pockets of post hoc significance whenever a meta-analysis produces a null result, explaining away decline effects as an inherent property of psi, and finally jumping to the next new promising procedure. This giddy process results in an ambiguous dataset that, just like the classic optical illusion of the old hag and attractive young woman, never contains enough information to allow closure in one direction or the other.

To help the field move forward and rapidly reach closure on the psi question, parapsychologists need to make four important changes in the way they view null findings. First, they should stop trying lots of new procedures and cherry-picking those that seem to work and instead identify one or two that have already yielded the most promising results. Second, rather than varying procedures that appear successful, they should instead have a series of labs carry out strict replications that are both methodologically sound and incorporate the most psi-conducive conditions possible. Third, researchers should avoid the temptation for retrospective meta-analysis by pre-registering the key details involved in each of the studies. And finally, researchers need to stop jumping ship from one experimental procedure to another and instead have the courage to accept the null hypothesis if the selected front-runners don't produce evidence of a significant and replicable effect.

I hope that this process will help consign the psi debate to the history books and parapsychologists will no longer find themselves sitting on the fence arguing the "there is enough evidence to justify further work but not enough to conclude one way or the other" position. Rather than nullify null results, experimenters should be brave enough to give it their best shot and finally discover whether psi actually exists. □

References

Alcock, J.E. 2003. Give the null hypothesis a chance: Reasons to remain doubtful about the existence of psi. In *Psi Wars: Getting to Grips with the Paranormal*, ed. J. Alcock, J. Burns, and A. Freeman, 29–50. Charlottesville, VA: Imprint Academic.

Bem, D.J., J. Palmer, and R.S. Broughton. 2001. Updating the ganzfeld database: A victim of its own success? *Journal of Parapsychology* 65: 207–218.

Kennedy, J.E. 2003. The capricious, actively evasive, unsustainable nature of psi: A summary and hypotheses. *Journal of Parapsychology* 67: 53–74.

Kanthamani, H., and R.S. Broughton. 1994. Institute for Parapsychology ganzfeld-ESP experiments: The manual series. Proceedings of Presented Papers: The Parapsychological Association 37th annual convention, 182–189.

Milton, J., and R. Wiseman. 1999. Does psi exist? Lack of replication of an anomalous process of information transfer. *Psychological Bulletin* 125: 387–391.

Pratt, J.G. 1978. Prologue to a debate: Some assumptions relevant to research in parapsychology. *The Journal of the American Society for Psychical Research* 72: 127–139.

Rao, K.R., and J.R. Palmer. 1987. The anomaly called psi: Recent research and criticism. *Behavioral and Brain Sciences* 10: 539–51.

Schmeidler, G.R., and H. Edge. 1999. Should ganzfeld research continue to be crucial in the search for a replicable psi effect? Part II. Edited ganzfeld debate. *Journal of Parapsychology* 63: 335–388.

Watt, C. 2006. Research assistants or budding scientists? A review of 96 undergraduate student projects at the Koestler Parapsychology Unit. *Journal of Parapsychology* 70: 335–356.

Willin, M. J. 1996. A ganzfeld experiment using musical targets. *Journal of the Society for Psychical Research* 61: 1–17.

Wedge Strategy Update

Intelligent Design Creationism Since the Dover Trial

The creationist havens of Louisiana and Texas are doing all they can—which is considerable—to flout the law and inject intelligent design into public schools.

BARBARA FORREST

Kitzmiller et al. v. Dover Area School District (Jones 2005)—the "Dover trial," the first intelligent design (ID) legal case—delivered a stunning defeat to the creationists at the Discovery Institute's Center for Science and Culture (CSC) in Seattle. They knew that *Kitzmiller* was, at its core, about them and their agenda; they had tried to dissuade the Dover, Pennsylvania, school board from implementing the policy over which eleven Dover parents filed suit (Forrest and Gross 2007). The Discovery Institute (DI) objected to the board's using the term "intelligent design" in the policy it ordered Dover High School teachers to read, telling ninth-grade biology students that "intelligent design is an explanation of the origin of life that differs from

Darwin's view" (Jones 2005). The Discovery Institute knew that intelligent design, which had already been exposed as creationism by expert scholarship, would be on perilous legal ground. As DI advisor Phillip Johnson said following the 2005 verdict, "I considered [Dover] a loser from the start" (D'Agostino 2006).

Johnson's apprehension was well-founded. The Discovery Institute's religious agenda, which it promotes through politics and public relations, is copiously documented. The plaintiffs' experts presented this documentation, buttressed by ID proponents' own references to ID as creationism, to Judge John E. Jones in federal court (Forrest and Gross 2007). Yet despite its legal drubbing (see SI, March/April 2006) the ID movement continues. The institute sanitized its terminology, as creationists have always done after defeats in federal court—of which there are now ten (Matsumura and Mead 2007)—and transitioned to promoting "academic freedom" (i.e., stealth creationist) bills in state legislatures. This is part of DI's Wedge Strategy.

DI's CSC, established in 1996 as the Center for the Renewal of Science and Culture (CRSC), outlined its strategy in a 1998 document entitled "The Wedge," informally called the "Wedge Document" (CRSC 1998). This sketch of the CSC's attack on evolution and the "materialistic conception of reality" that it supposedly spawned was intended for private viewing by potential donors, thus providing a candid glimpse at how the CSC views its program. The expectation of legal difficulties is integral to the strategy: "We will also pursue possible legal assistance in response to resistance to the integration of design theory into public school science curricula" (CRSC 1998). Its five-year objectives (1999–2003) also include a little-noticed item that the CSC activated after *Kitzmiller*: "Legal reform movements base legislative proposals on design theory." Execution of this objective, which began in 2007 and was aimed at state legislatures, succeeded in 2008 when Louisiana adopted legislation that was partially crafted by the CSC (CSC 2008; Winkler-Schmit 2009).

Most regrettably, however, the willingness of ID sympathizers at the state level to assist in promoting ID has caused tangible harm to an innocent person: Texas Director of Science Christina Comer, who was fired in 2007 ostensibly for violating the "neutrality" toward creationism that her employers at the Texas Education Agency (TEA) required. This sad development is ultimately the fruit of the CSC's relentless pursuit of the Wedge Strategy.

The Firing of Christina Comer

Texas is a creationist's haven. The CSC has invested much time and energy there, such as when it tried to influence the Texas Board of Education's (TBOE) selection of biology textbooks in 2003 (Evans 2003). Several CSC fellows, most notably William Dembski and Walter Bradley, reside in Texas. The erstwhile chair of the Texas board, creationist dentist Don McLeroy, works closely with the CSC, whose operatives he called "the creationist intelligent design people" in a 2005 Sunday school sermon at his church (McLeroy 2005). In May 2009, McLeroy's confirmation as chair failed in the Texas Senate (Scharrer 2009) only after (and because) he and fellow creationist board members wreaked havoc with the state's science standards—an episode in which the CSC was involved (NCSE 2009c). However, although such antics are common in Texas, no one foresaw that the TEA would fire Christina Comer.

Texas is a creationist's haven. The Discovery Institute has invested much time and energy there, such as when it tried to influence the Texas Board of Education's selection of biology textbooks in 2003.

McLeroy's self-avowed creationism alerted Texas pro-science advocates that creationists would attack the standards, the revision of which was slated for 2008. In 2007, the *Texas Observer* discovered a recording of McLeroy's Sunday school lecture (Wilder 2007), in which he boasted about the CSC's assistance during the textbook flap: "We had a bunch of the leaders: Dembski and all these people had come down to help us in the debate" (McLeroy 2005). Consequently, Governor Rick Perry's July 2007 appointment of McLeroy as board chair spelled trouble. Kathy Miller, director of the Texas Freedom Network, warned, "Dr. McLeroy will now be in charge of the board's scheduled revision of the state's science curriculum standards, an area where he has already cast his lot with extremists who want to censor what our schoolchildren learn" (Stutz 2007). McLeroy's appointment catalyzed hostility toward teaching evolution at the highest levels of Texas educational leadership.

In October 2007, Comer had been the director of science at the Texas Education Agency for nine years, after a long career as a science teacher. On October 23, she received an e-mail from Glenn Branch at the National Center for Science Education announcing my lecture "Inside Creationism's Trojan Horse: A Closer Look at Intelligent Design," scheduled for November 2 in Austin. After verifying my credentials via an Internet search, she forwarded Branch's e-mail to several individuals and two small science education groups, as she had

Barbara Forrest is a professor of philosophy at Southeastern Louisiana University and co-author with Paul R. Gross of Creationism's Trojan Horse: The Wedge of Intelligent Design. *A Committee for Skeptical Inquiry fellow, her first-person report on her testimony in the Dover trial, which ruled that intelligent design is not science, appeared in the January/February 2007* SKEPTICAL INQUIRER *and is reprinted in the new SI anthology* Science Under Siege *(Prometheus 2009).*

in the past with similar announcements. She was soon summoned by her supervisor: "Ms. Comer said that barely an hour after forwarding the e-mail . . . about Dr. Forrest's talk, she was . . . informed that Lizzette Reynolds, deputy commissioner for statewide policy and programs, had seen a copy and complained, calling it 'an offense that calls for termination'" (Blumenthal 2007; NCSE 2007). Reynolds, who worked for George W. Bush during his governorship, had arrived at the Texas Education Agency in January and had never met Comer (NPR 2007).

What had Comer done that was so egregious? TEA employee Monica Martinez, who wrote the termination memo, described her offense:

> The [forwarded] email states that the speaker [Barbara Forrest] is a board member of a science education organization [NCSE], and the email clearly indicates that the group opposes teaching creationism in public education. . . .
>
> Ms. Comer's email implies endorsement of the speaker and implies that TEA endorses the speaker's position on a subject on which the agency must remain neutral. (Martinez 2007; Forrest 2008d)

With little recourse except to disguise ID with shopworn creationist code language, the Discovery Institute announced, "We have entered a new front in the debate over intelligent design—the need to protect academic freedom, particularly on college campuses."

Comer was ordered to send out a retraction and was subsequently forced to resign for violating the TEA's "neutrality" policy. However, Steven Schafersman of Texas Citizens for Science offers a more likely explanation for her firing:

> The real reason . . . Comer was forced to resign is because the top TEA administrators and some SBOE [State Board of Education] members wanted her out of the picture before the state science standards . . . were reviewed, revised, and rewritten . . . beginning in January 2008, and she would have some influence to make sure the standards were scientifically accurate and of high quality. (Schafersman 2007)

The following timeline of events makes this explanation plausible: (1) Reynolds arrived at the TEA in January 2007. (2) McLeroy became TBOE chair in July 2007. (3) Reynolds became head of the TEA's curriculum division in September 2007. Comer reported that "we were actually told in a meeting in September that if creationism is the party line, we have to abide by it" (Heinauer 2008). (4) In November 2007, Comer was fired. (5) Revision of the standards began in January 2008.

On June 30, 2008, Comer sued the Texas Education Agency, contending that "by professing 'neutrality,' the Agency credits creationism as a valid theory when it is actually a religious belief" (*Christina Castillo Comer v. Robert Scott, Commissioner, and Texas Education Agency* 2008). Consequently, she contended, the policy endorsed religion, meaning that Comer was fired for violating an unconstitutional policy. She requested reinstatement and an injunction against the policy. On March 31, 2009, a federal judge dismissed her case (NCSE 2009a). The Discovery Institute issued a gloating response: "Thankfully, a clear-thinking judge has now tossed this publicity stunt from court" (Luskin 2009). This response reflects DI's callousness about the well-being of public school students and educators. Comer's lawsuit addressed the genuine injustice that the TEA committed against one of its most dedicated employees. She lost both her job and the confidence of knowing that her state appreciated her service. In August 2009, she appealed the dismissal (*Christina Castill Comer v. Robert Scott, Commissioner, and Texas Education Agency* 2009). The next step rests with the Fifth Circuit of Appeals.

"Academic Freedom"—ID Style

Creationists have invoked "academic freedom" for decades, as young-earth creationist Henry Morris did in 1975: "[Teaching both evolution and creation] is obviously the only . . . fair approach . . . consistent with traditional American principles of religious freedom, civil rights, freedom of information, scientific objectivity, academic freedom, and constitutionality" (Morris 1975). Louisiana's 1981 Balanced Treatment of Creation-Science and Evolution-Science Act, which the U.S. Supreme Court declared unconstitutional in 1987, was defended by Louisiana legislators and defense attorneys as protective of academic freedom. The Court disagreed: "'Academic freedom' does not encompass the right of a legislature to structure the public school curriculum in order to advance a particular religious belief" (*Edwards v. Aguillard* 1987).

With little recourse after *Kitzmiller* except to disguise ID with shopworn creationist code language, the Discovery Institute's Winter 2006 newsletter announced, "We have entered a new front in the debate over intelligent design—the need to protect academic freedom, particularly on college campuses" (DI 2006). However, other than production of the frenetically marketed, pro-ID pseudodocumentary *Expelled: No Intelligence Allowed*, showcasing creationists whose university employers supposedly persecuted them (Premise Media 2008), ID's strategy foundered on the college front. The producers' ruse to deceive prominent ID critics into being interviewed has been exhaustively exposed (Scientific American 2008; Scott 2008).

Nonetheless, the Discovery Institute's academic freedom charade breathed life into its promotion of "legislative proposals [based] on design theory." In September 2007, DI posted its Model Academic Freedom Statute on Evolution on the Internet (DI 2007). In 2008, variants of it—written in the code language that DI must now use—were introduced in six states, including Louisiana. The deceptive title of this "statute" has fooled no one. Louisiana Senator Ben Nevers stated frankly

that he introduced the Louisiana Academic Freedom Act on behalf of the Louisiana Family Forum (LFF), a Focus on the Family affiliate, because "they believe that scientific data related to creationism should be discussed when dealing with Darwin's theory" (Schon 2008). CSC fellow David DeWolf helped craft this law, and CSC staffer Casey Luskin accompanied *Expelled* "victim" Caroline Crocker to Louisiana to testify for it (CSC 2008; Crowther 2008). After the legislature passed a renamed version of the bill with only three dissenting votes, Governor Bobby Jindal signed the Louisiana Science Education Act (LSEA) on June 25, 2008 (LA Legislature 2008).

The LSEA requires Louisiana's Board of Elementary and Secondary Education (BESE) to "allow and assist teachers, principals, and other school administrators" to promote "critical thinking skills, logical analysis, and open and objective discussion of scientific theories being studied including, but not limited to, evolution, the origins of life, global warming, and human cloning" through the use of "supplemental textbooks and other instructional materials" (LA Legislature 2008). The law includes an almost verbatim restatement of the Discovery Institute's telltale religion disclaimer in its model statute: "Nothing in this act shall be construed as promoting any religious doctrine, promoting discrimination for or against a particular set of religious beliefs, or promoting discrimination for or against religion or non-religion" (DI 2007). By including other "theories," the bill's authors tried to deflect accusations that evolution was being targeted. However, LFF operatives have routinely addressed only evolution in their public comments. Furthermore, analysis of the LSEA's historical provenance and terminology demonstrates that it is a creationist bill written in identifiable code language (Forrest 2008a). "Academic freedom," "critical thinking," "logical analysis," and "open and objective discussion"—the code terms of choice in Louisiana—have traceable creationist origins (Forrest 2008a). In addition, the LFF, whose mission is "to persuasively present biblical principles in the centers of influence" (LFF 2009b), has promoted creationism for almost a decade (LFF 2003); it currently promotes creationist textbook addendums and the Discovery Institute's "DVD teaching modules" (LFF 2009b).

Making matters worse, in January 2009 the LFF persuaded Louisiana's Board of Elementary and Secondary Education to gut the policy under which school administrators must implement the LSEA. The Department of Education, which BESE ordered to draft the policy, worded it carefully, including two essential safeguards: (1) "Religious beliefs shall not be advanced under the guise of encouraging critical thinking"; and (2) "Materials that teach creationism or intelligent design or that advance the religious belief that a supernatural being created humankind shall be prohibited for use in science classes" (Forrest 2009). However, apparently using political pressure, the LFF got the first safeguard deleted sometime before final consideration of the draft in January 2009 (Sentell 2009). At BESE's January 13 meeting, the LFF, its attorneys, and its creationist supporters persuaded BESE and State Superintendent Paul Pastorek to delete the second safeguard as well (Forrest 2009). On January 14, LFF director Reverend Gene Mills announced to a fundamentalist news service that "Louisiana is open for business. . . . And academic freedom and inquiry are welcomed here in the state of Louisiana" (Chagnon 2009).

How Did This Happen?

Academic freedom bills in five other states failed in 2008, as did six bills in 2009, making Louisiana—so far—the only state with such a law. The Discovery Institute benefitted from several factors. First, Louisiana has become increasingly conservative, and although the Religious Right has lost momentum nationally it has grown stronger in Louisiana. One newspaper

Image via Newscom

Louisiana Governor Bobby Jindal

observed that "the new [2008] Legislature is probably the most conservative Louisiana has had since Reconstruction . . . and it's possibly the most religious" (Hasten 2008). Mills agreed that this legislature was "family and faith friendly" with "an acute sense of the need to protect basic values" (Hasten 2008).

Second, although the LFF has lobbied the legislature aggressively for ten years, they needed a friendly governor in order to pass creationist legislation. Bobby Jindal was—and is—their man. He supported teaching creationism during his 2003 and 2007 gubernatorial campaigns (Forrest 2008b). He cultivates Religious Right allies; the LFF is his closest such ally inside Louisiana (Forrest 2008c). After the 2007 election, the LFF threw a "Christmas gala" at which Jindal was the star. In

a YouTube video of the event, Mills presides in front of gala attendees as Jindal undergoes the "laying on of hands," apparently by some of the "forty or forty-five" pastors who, Mills announces, "have sacrificed and come in from all over the state" (LFF 2008).

Third, since Jindal's inauguration, the LFF controls Louisiana's social policy agenda. New Orleans columnist James Gill is right: "The Family Forum has this administration in its clutches" (Gill 2009). In 2008, no legislator would cross either Jindal or the LFF, and the LFF was DI's direct connection to Louisiana lawmaking. LFF operative Darrell White had publicly supported DI's 2003 attack on the Texas textbook selection process by attending hearings and sending a supportive letter to the Texas Board of Education (White 2003); DI was happy to reciprocate in 2008. Moreover, when the LFF attacked the BESE policy, CSC Associate Director John West divulged that DI is giving the LFF legal advice (Barrow 2009). After biding their time until the final star aligned with Jindal's election, they struck, working hand-in-hand. Their conniving has done tangible harm to Louisiana.

Although the Louisiana Family Forum has lobbied the legislature aggressively for ten years, they needed a friendly governor in order to pass creationist legislation. Bobby Jindal was—and is—their man.

The Price of Success

In February 2009, the Society for Integrative and Comparative Biology (SICB), which wrote to Jindal in 2008 asking him to veto the LSEA, wrote to him again: "We will not hold the Society's 2011 . . . meeting in New Orleans . . . in large part because of . . . [LSEA initial bill number] SB 561, which you signed into law in June 2008" (Satterlie 2009). Instead, the society will meet in Utah, where the State Board of Education adopted a strong statement of support for teaching evolution (UT State Board of Education 2005). Whereas Louisiana's passage of the LSEA attracted virtually no national attention, this news flew across national newswires (Nossiter 2009) and Internet blogs.

The LFF was caught off guard by news of the damage that its law has done to Louisiana. In a letter to the *Baton Rouge Advocate* defending the LSEA and dismissing SICB "decision makers," Mills launched a nasty attack on "Darwin's ideas," which "left in their wake a trail of feticide, genocide, racism, hatred, war and terrorism" (Mills 2009). But the Discovery Institute plunged its hypocrisy to a new low in its "Open Letter to the Society for Integrative and Comparative Biology," penned by neurosurgeon and *Expelled* "victim" Michael Egnor (NCSE 2009b):

> The SICB's opposition to academic freedom in science classrooms and its interference in the right of the citizens of Louisiana to set educational policy for their children in their schools without interference by national scientific organizations is repellant. . . . Your attempt at censorship and your boycott are a sneer at the citizens of Louisiana. . . . But you misunderstand the people for whom you clearly have such disdain. . . (Egnor 2009)

The DI's newly acquired concern for Louisiana's well-being is unimpressive. There were ample opportunities for a show of concern in 2005 after two killer hurricanes, Katrina on August 29 and Rita on September 24. Dembski weighed in on the tragedy of Katrina—but not in the same manner as most of his fellow Christians. In his September 3 Uncommon Descent blog post "[Offtopic:] How to Deal with Looters," dated five days after Katrina struck, he posted an April 18, 1906, newspaper clipping of a proclamation that the mayor of San Francisco had issued, as Dembski noted, after "a devastating earthquake." The true meaning of Dembski's post was unbecomingly obvious:

> [Dembski:] In 1906 a devastating earthquake hit San Francisco. The mayor at that time was one E.E. Schmitz. Mayor Schmitz issued the following proclamation:
>
> [clipping:]
> PROCLAMATION BY THE MAYOR
>
> The Federal Troops, the members of the Regular Police Force and all Special Police Officers have been authorized by me to KILL any and all persons found engaged in Looting or in the Commission of Any Other Crime. . . .
> (Dembski 2005; NPR 2004)

On September 3, people were drowning in New Orleans. Bodies were bloating in the Louisiana sun. And this was all Dembski could find in his heart to say.

And Now . . .

Louisiana now has the distinction of passing legislation that more than half a dozen other states were sensible enough to reject. The fact that Louisiana has already gifted the nation with a Supreme Court ruling against teaching creationism carried no weight with the governor and the legislature. As Reverend Mills announced, "Louisiana is open for business." Creationists are welcome in the public schools of the Pelican State. The Discovery Institute wedged open the door. □

References

Barrow, B. 2009. Science lesson content debate expected today. *New Orleans Times-Picayune*, January 13. Available online at www.nola.com/timespic/stories/index.ssf?/base/news-6/1231828836259640.xml&coll=1.

Blumenthal, R. 2007. Official leaves post as Texas prepares to debate science education standards. *New York Times*, December 3. Available online at www.nytimes.com/2007/12/03/us/03evolution.html.

Center for the Renewal of Science and Culture (CRSC). 1998. The wedge. Available online at http://ncseweb.org/creationism/general/wedge-document.

Center for Science and Culture. 2008. David DeWolf on the Louisiana Academic Freedom Bill. Intelligent Design the Future podcast, June 13. Available online at www.idthefuture.com/2008/06/david_dewolf_on_the_louisiana.html.

Chagnon, P. 2009. Freedom reigns in Louisiana classrooms. *OneNewsNow*, January 14. Available online at www.onenewsnow.com/Education/Default.aspx?id=383628.

Christina Castillo Comer v. Robert Scott, Commissioner, and Texas Education Agency. 2008. Available online at http://ncseweb.org/creationism/legal/chris-comer-docs.

———. 2009. United States Court of Appeals Fifth Circuit. Available online at http://ncseweb.org/webfm_send/1170.

Crowther, R. 2008. Dr. Caroline Crocker on academic freedom and dissent from Darwinism. Intelligent Design the Future podcast, May 28. Available online at www.idthefuture.com/2008/05/dr_caroline_crocker_on_academi.html.

D'Agostino, M. 2006. In the matter of Berkeley v. Berkeley. *Berkeley Science Review,* Spring: 31–35. Available online at http://sciencereview.berkeley.edu/articles/issue10/evolution.pdf.

Dembski, W. 2005. How to deal with looters. Uncommon Descent weblog, September 3. Available online at www.uncommondescent.com/education/offtopic-how-to-deal-with-looters/.

Discovery Institute (DI). 2006. Fighting for academic freedom. *Discovery Institute Views*, Winter: 2. Available online at www.discovery.org/scripts/viewDB/filesDB-download.php?command=download&id=695.

———. 2007. Model Academic Freedom Statute on Evolution, September 7. Available online at www.academicfreedompetition.com/freedom.php.

Edwards v. Aguillard. 1987. United States Supreme Court. Available online at http://supct.law.cornell.edu/supct/html/historics/USSC_CR_0482_0578_ZC.html.

Egnor, M. 2009. An open letter to the Society for Integrative and Comparative Biology. *Evolution News and Views blog*, March 2. Available online at www.evolutionnews.org/2009/03/an_open_letter_to_the_society_2.html.

Evans, S. 2003. Evolution: Still deep in the heart of textbooks. *Reports of the National Center for Science Education* 23 (September-December). Available online at http://ncseweb.org/rncse/23/5-6/evolution-still-deep-heart-textbooks.

Forrest, B. 2008a. Analysis of SB 733: Louisiana Science Education Act (Updated June 5). Louisiana Coalition for Science. Available online at www.lasciencecoalition.org/docs/Forrest_UpdatedAnalysis_SB_733_6.5.08.pdf.

———. 2008b. Bobby Jindal's creationist talking points. Talk to Action, June 14. Available online at www.talk2action.org/story/2007/10/15/222041/63.

———. 2008c. The Discovery Institute, the LA Family Forum, and the "LA Science Education Act." Talk to Action, June 26. Available online at www.talk2action.org/story/2008/6/26/18920/8497/Front_Page/The_Discovery_Institute_the_LA_Family_Forum_and_the_quot_LA_Science_Education_Act_quot_UPDATED.

———. 2008d. Neutrality that isn't: The case of the Texas Education Agency. Talk to Action, January 14. Available online at www.talk2action.org/story/2008/1/14/15527/0696/war_on_public_education/Neutrality_that_Isn_t_The_Case_of_the_Texas_Education_Agency.

———. 2009. Louisiana open for business—creationists welcome. Louisiana Coalition for Science, January 25. Available online at http://lasciencecoalition.org/2009/01/25/louisiana-open-for-business/.

Forrest, B., and Gross, P.R. 2007. *Creationism's Trojan Horse: The Wedge of Intelligent Design*. New York: Oxford University Press.

Gill, J. 2009. Mad scientists. *New Orleans Times-Picayune*, February 18. Available online at http://blog.nola.com/jamesgill/2009/02/mad_scientists.html.

Hasten, M. 2008. New legislature seen as more conservative, religious. *Monroe News Star*, April 20.

Heinauer, L. 2008. Workers reined in before state science review? *Austin American-Statesman,* July 3. Available online at www.statesman.com/search/content/news/stories/local/12/06/120607tea.html.

Jones, J.E. 2005. Memorandum opinion. *Kitzmiller et al. v. Dover Area School District*. Available online at www.pamd.uscourts.gov/kitzmiller/kitzmiller_342.pdf.

Louisiana Family Forum (LFF). 2003. Origins science websites. *Forum Notes: A Louisiana Family Forum Fact Sheet* 4(1).

———. 2008. Louisiana Family Forum's Governors Christmas Gala, January 8. Available online at www.youtube.com/watch?v=n3nje8u3yfA.

———. 2009a. About LFF. Available online at www.lafamilyforum.org/about-lff.

———. 2009b. Critical thinking in the classroom, February 2. Available online at www.lafamilyforum.org/critical-thinking.

Louisiana Legislature. 2008. SB 733—2008 Regular Session (Act 473). Available online at www.legis.state.la.us/billdata/streamdocument.asp?did=503483.

Luskin, C. 2009. Texas evolution lobby dealt another blow with dismissal of Chris Comer lawsuit. *Evolution News and Views blog*, April 2. Available online at www.evolutionnews.org/2009/04/texas_evolutionlobby_dealt_ano.html.

Martinez, M. 2007. Memorandum Re: Proposed Disciplinary Action, November 5. Texas Education Agency. Available online at http://alt.coxnewsweb.com/statesman/pdf/11/112907science_memo.pdf.

Matsumura, M., and L. Mead. 2007. Ten major court cases about evolution and creationism. National Center for Science Education. Available online at http://ncseweb.org/taking-action/ten-major-court-cases-evolution-creationism.

McLeroy, D. 2005. Intelligent design primer. Lecture presented at the Grace Bible Church, Bryan, TX. Available online at www.tfn.org/site/PageServer?pagename=mcleroylecture.

Mills, G. 2009. Darwin's ideas an affront to reason. *Baton Rouge Advocate*, March 10. Available online at www.2theadvocate.com/opinion/41004047.html.

Morris, H. 1975. Resolution for equitable treatment of both creation and evolution. *Impact*, August 1. Available online at www.icr.org/article/resolution-for-equitable-treatment-both-creation-e.

National Center for Science Education (NCSE). 2007. Texas education official forced to resign over evolution, November 29. Available online at http://ncseweb.org/news/2007/11/texas-education-official-forced-to-resign-over-evolution-001143.

———. 2009a. Comer case dismissed, April 1. Available online at http://ncseweb.org/news/2009/04/comer-case-dismissed-004712.

———. 2009b. Michael Egnor. Expelled Exposed, March. Available online at www.expelledexposed.com/index.php/the-truth/egnor.

———. 2009c. Science setback for texas schools, March 30. Available online at http://ncseweb.org/news/2009/03/science-setback-texas-schools004708.

National Public Radio (NPR). 2004. Proclamation by the Mayor. All Things Considered, April 18. Available online at www.npr.org/programs/atc/features/2004/apr/quake/proclaimbig.jpg.

———. 2007. In Texas, a skirmish over evolution in schools. Talk of the Nation, December 7. Available online at www.npr.org/templates/story/story.php?storyId=17007209.

Nossiter. A. 2009. Boycott by science group over Louisiana law seen as door to teaching creationism. *New York Times*, February 16. Available online at www.nytimes.com/2009/02/17/us/17boycott.html.

Premise Media. 2008. About the movie. *Expelled: No Intelligence Allowed*. Available online at www.expelledthemovie.com/aboutthemovie.php.

Satterlie, R. 2009. Letter to Governor Bobby Jindal, February 5. Society for Integrative and Comparative Biology. Available online at www.sicb.org/resources/LouisianaLetterJindal.pdf.

Scharrer, G. 2009. Senate removes controversial education leader. *San Antonio Express-News*, May 28. Available online at www.mysanantonio.com/news/46402537.html.

Schafersman, S. 2007. TEA director of science forced to resign. Texas Citizens for Science, November 29. Available online at www.texscience.org/reviews/tea-science-director-resigns.htm.

Schon, S. 2008. Bill allows teaching creationism as science. *Hammond Daily Star*, April 6. Available online at www.hammondstar.com/articles/2008/04/06/top_stories/9327.txt.

Scientific American. 2008. Expelled Explained, April 9. Available online at www.scientificamerican.com/podcast/episode.cfm?id=34145C53-079F-CA62-1A6616EAA8567357.

Scott, E.C. 2008. A rude introduction to "Expelled." *Reports of the National Center for Science Education* 28 (September–December): 11–12. Available online at http://ncseweb.org/rncse/28/5-6/rude-introduction-to-expelled.

Sentell, W. 2009. Science lessons to stir debate. *Baton Rouge Advocate*, January 9. Available online at www.2theadvocate.com/news/37319874.html?showAll=y&c=y.

Stutz, T. 2007. Conservative to lead state education board. *Dallas Morning News*, July 18. Available online at www.dallasnews.com/sharedcontent/dws/dn/education/stories/DN-sboe_18tex.ART.State.Edition1.3bba4d6.html.

Utah State Board of Education. 2005. Utah State Board of Education Position Statement on Teaching Evolution. Available online at www.schools.utah.gov/curr/science/pdf/EvolutionPositionStatement.pdf.

White, D. 2003. Letter to Texas State Board of Education, October 9. Texas Education Agency Document, p. 382. Available online at www.tea.state.tx.us/textbooks/adoptprocess/2003pubresponses.pdf.

Wilder, Forrest. 2007. Missing links. *Texas Observer*, August 3. Available online at http://web.archive.org/web/20071014060852/http://texasobserver.org/blog/?p=533.

Winkler-Schmit, D. 2009. Monkey business: The Louisiana Science Education Act. *Best of New Orleans*, March 9. Available online at http://bestofneworleans.com/gyrobase/Content?oid=oid%3A52025.

Stephen Fry—Last Chance to Think

KYLIE STURGESS

Stephen Fry is an English actor, comedian, author, television presenter, director—and skeptic. During his university years he teamed up with *House, M.D.* actor Hugh Laurie to appear on the whimsical sketch show *A Bit of Fry and Laurie*. He has written several very well-received books, including *The Liar*, *The Hippopotamus*, and half an autobiography called *Moab is My Washpot*. More recently he produced a scholarly but friendly guide to understanding and writing poetry, *The Ode Less Travelled*. He also appeared on popular British TV shows like *Blackadder, Jeeves and Wooster*, and the quiz show *Q.I.*

En route to one of the last filming locations in Australia for his new documentary, *Last Chance to See*, Stephen Fry

snapped a quick photo from his hotel window and posted it on the popular online site Twitter. The whole Twittosphere immediately knew where he was, for the arch of the Sydney Harbour Bridge was in the background. He was in Sydney but only for a short time. Within a few hours, I had contacted Mr. Fry's agents and organized an interview.

KYLIE STURGESS: You have just returned from a lengthy around-the-world investigation based upon Douglas Adams's book *Last Chance to See*, written in 1990, which I use when teaching high-school English. What inspired you to recreate the journey that he and Mark Carwardine completed [when they teamed up to find out what was happening to exotic, endangered creatures worldwide—animals that they may never have gotten another chance to see]?

Credit: WENN.com

STEPHEN FRY: Douglas did describe it as his favorite book, and I think that was because it changed his life. [It was] his "second chapter," if you like. He never had a third chapter because of his early death, but I know how important it was for him to go around the world and look at the extraordinary habitats and the rare creatures that relied on them. And caring for the disappearing species was something he devoted a lot of time to.

Now, what inspired me to recreate the journey was, firstly, that Douglas's family asked me to; plus it was a desire I've always had to go into the wild. Like so many people of my generation I grew up on natural history on TV, and it never occurred to me that one day I would actually be looking at lions close by, that I'd be with hippopotamuses, gorillas, lemurs, rare birds, diving turtles, and all these amazing things . . . blue whales breaching in front of your very eyes. It affected me profoundly, and it affected Douglas.

It's very hard to say which was my most influential experience. There are one or two moments which bring one close to the most ecstatic euphoria that one can ever experience (without the use of pharmaceuticals or alcohol). I'd say it was seeing hundreds of green turtles hatching out of their nest and streaming over the dunes into the sea. This was off the coast of Malaysia.

It's not until the female turtle is about twenty-five years old that she can lay eggs—that the "turtle is fertile," as they'd say in America. She mates with the male and then she swims in—not necessarily on a moonlit night; there's a great mistaken belief that this is keyed to some biodynamic phase of the Moon; it's not actually true—to the place where she was born and crawls up the beach (not having been on land since she was born, she finds the place again using Earth's magnetic field), lays 80 to 120 eggs and covers them up. And I was right beside this huge beautiful animal doing just that; she took 90 minutes to lay the eggs, an incredible sight, and then she lumbered back into the water.

STURGESS: In that documentary, apparently there's an account of a healing ceremony in Madagascar, which is something you've touched upon before in your novel *The Hippopotamus*. Why do you think pseudoscientific claims, such as holistic healing, continue to pervade our society despite advances in medicine?

FRY: Well, my interpretation is no more valid than anyone else's, but I would say in terms of medicine, people want to take control of their own lives, and ironically they seem to think that they are taking control of their lives more by using so-called complementary or alternative medicines than by using orthodox medicine. In other words, they think it's a statement of originality and individuality. To you and me it seems self-evidently ridiculous, this homeopathic medicine. It is so preposterous, and yet some people I know and respect insist on believing it.

The powers of the placebo are so strong that it may be morally wrong to call homeopathy a lie because the moment you say it then a placebo falls to pieces and loses its power. I am a great believer in double-blind random testing, which is the basis of all drug testing. People still insist on things like holistic healing and things that have no real basis in evidence because they want it to be true—it's as simple as that. If you're dying of cancer or very, very ill, then you'll cling to a straw. I feel pretty dark thoughts about the kind of people who throw straws at drowning, dying men and women, and I'm sure most of us would agree it's a pretty lousy thing to do. Some of these people perhaps believe in the snake oil they sell or allow themselves to believe in it. That's why James Randi is so good, because he knows what magicians know: if you do a card trick on someone, they will report that it was unbelievable, they describe the effect the magician wanted, and they miss out all

---

Kylie Sturgess has completed her master's degree in the measurement of paranormal belief, works as a research assistant at Curtin University, Western Australia, and is a member of The Skeptic Zone*, the Australian podcast for Science and Reason (www.skepticzone.tv). Her Web site is available at http://podblack.com.* *This interview with Stephen Frye is courtesy of* The Skeptic Zone *and is printed in the* SKEPTICAL INQUIRER *with the permission of producer Richard Saunders and interviewer Kylie Sturgess. For more about Stephen Fry, head to his official site at www.stephenfry.com.*

the steps in between that seemed irrelevant because the magician made them irrelevant, so they didn't notice them. People will swear that a clairvoyant mentioned the name of their aunt from nowhere, and they will be astonished if you then play a recording that shows that thirty-two names were said before the aunt's name, none of which had any effect on them. That's because they wanted to hear their aunt's name; they wanted the trick to work, so they forgot all the failures in the same way as people forget all their dreams that have no relevance to their lives, but they mark when they dream of someone they haven't met for ages that they see the next day. I would be astounded if everyone had coincidences like that—yet people say that is somehow closed-minded of me!

STURGESS: Of course, it's not just the pseudosciences that pervade; there are also paranormal beliefs. I was wondering if you're surprised that the same beliefs exist today?

FRY: No, I am not surprised. I hope I know enough about history and human nature to agree that there is one born every minute and to know that there is desperation to make sense of things, and making sense of the universe isn't easy. Making sense of our own lives isn't easy. There are different ways of doing it—by observing people, by reading novels and poetry, by looking at paintings, listening to music, allowing our minds to concentrate on the experiences we had and the observations we've made about how people behave. Then in a wider sense we can look at the world and make observations about how animals behave and what they look like and why they look like it, why rain falls, and all kinds of phenomena that occur, and we can do this by observation, experiment, repetition, and understanding. This is essentially what we call the scientific method, the empirical method, more importantly.

Or, we can cheat—we can just say "there's an invisible person that makes it happen," or the stars tell you, or it's all predestined, or it's something to do with an inborn power of the mind, which isn't the power of learning. In other words, you can be *lazy*; instead of bothering to find how numbers work or observing how animals behave, you just say it's all according to some cosmic vibration. Sad, but people naturally want to cut corners, much as water wants to go the shortest route to the sea, so human beings want to find the shortest route to the truth, but unfortunately that takes them to the great "ocean of bullshit" that lies out there and to all those people prepared to make money out of them. All the cold-reading clairvoyants and the nonsensical astrologers and absurd ESP merchants and other such people who talk about vibrations and energies. . . . God, if there's a word that drives me mad it's "energy" used in a nonsensical way—don't get me started!

Let's just say that, to me, the true mystery of the universe is something that is available to all, not through the arcane rules of some nonsensical, unprovable drivel—but is there for your eyes, it is there to see by just simply recognizing observable laws and repeatable instances of things like sunsets and how they work. And seeing what we've done on the basis of that understanding, so every time that you flick a light switch or turn on a GPS, you have to realize on what that GPS is predicated, on the science—without it the GPS couldn't possibly work. The fact that Earth must be round, the fact that it must move at this speed, the fact that geostationary orbit means this, the fact that triangulation means that—all these things tell us so much how science is right.

STURGESS: You're also the host of a TV show in the United Kingdom called *Q.I.*, which stands for "Quite Interesting." It's been described as a "comedy panel quiz," yet it could very well be called a show that questions illogical thinking and dangerous beliefs. Do you consider comedy to be a "way in" for people to challenge irrational thinking?

FRY: Comedy is always about the real world. Philosophers or religionists will make a pompous, abstract statement and a comedian will say, "Is that true on a *Wednesday*?" Comedians want a cut and dried example of the facts of the world. Because comedy is about observation—as is science—it's about repeatable patterns, and it's testing some statement that may be preposterous or may be true. Statements made of grandeur and abstract truth are always tested by comedians, so in that sense, comedy is a very good way to get the credulous onside, if you like. Because it says "Is that true? Is it really true? Let's see!"

STURGESS: Finally, your love of technology is well known—you've written for many years on technology in a variety of publications; you have a very popular podcast called *Podgrams* that is available on your Web site and on iTunes. Recently you've embraced Twitter and written about the experience and have been the focus of media attention because of it. Do you think that your love of technology is an important part of your appeal to your audience? And what do you hope for technological advances in the future?

FRY: My audiences all share an interest in technology because those that don't have stopped being my audience. It's about what one hopes for and what happens. Of course like everyone else I hope for 3-D television and for fantastic robots I can have sex with that then turn into machines that clean my room! I'm a human being—I want slavish satisfaction; I want joy and pleasure to be brought to me by the machines. But I also love the connections that technology gives me with other people. I am worried about privacy and that one day the machines might stop and we won't know what to do with ourselves and not be able to cope! So my hope for technology is that it will continue to be free and open and will become dominated not by business interests as now, not by politicians, religious fundamentalists, or maniacs, but by the general sum of humanity, whom I think to be good and enlightened for the most part.

I know there are dark and hideous slimy corners of the Internet, but one is able to avoid them. The Internet is like a great city; of course it has slums and red-light districts and weird temples and strange churches, but it also has grand cultural palaces, remarkable museums and libraries, places of entertainment, shops and stores, and exciting parks. □

Coral Castle

Fact and Folklore

How a diminutive, frail, uneducated, unskilled man built Coral Castle unaided and without modern machinery has supposedly "baffled scientists, engineers, and scholars." This article investigates these claims and other persistent myths and mysteries surrounding Coral Castle.

KAREN STOLLZNOW

Tourists flock to Florida to visit the state's beaches, national parks, and theme parks. They don't usually travel to the tiny town of Homestead, between Miami and the Florida Keys, to see Coral Castle. Even some of the locals hadn't heard of the place. Yet this unassuming rock garden has been called the Eighth Wonder of the World, compared by some to the Great Pyramid of Giza and Stonehenge, and is indeed known as "America's Stonehenge." At the very least it is listed on the National Register of Historic Places.

Edward Leedskalnin (Eduards Liedskalniņš), a five-foot-tall, one-hundred-pound immigrant from Latvia, relocated to Florida where he spent almost thirty years single-handedly excavating, carving, and constructing 1,100 tons of

coral rock with his bare hands to build "Rock Gate Park," a sculpture garden for his unrequited love.

The story of Coral Castle is ingrained in folklore, but no two stories are the same. At the age of twenty-six, Leedskalnin was engaged to sixteen-year-old Agnes Scuffs. The night before the wedding, Scuffs broke off the engagement and broke Leedskalnin's heart. Lovesick Leedskalnin left Latvia seeking opportunity overseas. Employed in various manual labor jobs, he traveled through Europe to Canada and across the United States. During these travels he contracted tuberculosis. Hearing that Florida had a climate beneficial to this condition, Leedskalnin relocated there around 1918. He spent a few years recuperating from his illness before purchasing ten acres of property in Florida City around 1920. This land was unfavorable to cultivation yet favorable to quarrying oolite, the native limestone bedrock (technically, the "castle" isn't coral). The eccentric Leedskalnin proceeded to build "Ed's Place," Rock Gate Park, over the next three decades.

© Karen Stollznow 2008

© Leedskalnin 2008

Undoubtedly, the project had immense personal significance for Leedskalnin. When asked why he built the park, Leedskalnin would answer mysteriously, "For my Sweet Sixteen." It is widely believed that "Sweet Sixteen" was a reference to Agnes Scuffs. Some sources present her surname as the more Lettish-sounding *Skuvst* (Stansfield 2006). Latvian account *Koraļļu Pils* asserts that this woman did indeed exist, although her name was Hermīne Lūsis (Stavro 2005). Sweet Sixteen never saw Rock Gate Park. This sad and strange story was the inspiration for Billy Idol's 1987 song "Sweet Sixteen" and for much paranormal and pseudoscientific conjecture.

The modern Coral Castle is a courtyard of prehistoric-looking carvings covering a small section of three acres. Rooms without walls house sculptures of stone furniture, including a two-ton heart-shaped table and a twenty-foot-long table carved in the form of Florida. A family bedroom contains four beds, a child's rocker, and a rocking cradle. A throne room displays five rocking chairs. Indoor features are combined with outdoor elements; a moon fountain is flanked by eighteen-ton first and last quarters of the moon and a full moon fish pond weighing twenty-three tons. There is a children's playground based on the fairy tale "Goldilocks and the Three Bears." Bizarre stone stocks stand in the repentance corner for punishing a fictional wife or children for any misbehavior. There is a forty-foot-tall obelisk and a sun dial that records the hours between 9 AM and 4 PM. A thirty-ton lens-less Polaris telescope is fixed on the North Star, and various cosmological sculptures include eighteen-ton carvings of Mars and Saturn and a twenty-three-ton crescent moon.

The sculptures are mostly ornamental, although a well, outdoor bathtub, and barbecue cooker are functional. Palm trees and plants grow in the gravel floor, but there is no roof. It's an inside-out "house," although it is uninhabitable, with separate living quarters and a two-story tower built of blocks weighing four to nine tons each. The room downstairs functioned as Leedskalnin's tool shed and workshop, and he lived upstairs in Spartan conditions.

There are two unused rock entrances (hence "Rock Gate Park"), a three-ton gate and nine-ton revolving boulder gate that could supposedly be "pushed open with the slightest touch of a pinkie finger!" before it was affected by erosion. The garden is surrounded by four walls measuring eight by three by four feet. The north wall is composed of three sections; the middle block is the heaviest in the park, weighing thirty tons, and is topped with four blocks creating a "crown." These measurements are supplied on site, but some are probably exaggerated; e.g., Stansfield claims the "nine-ton gate" weighs 5.59 tons (Stansfield 2006).

The sculptures have been compared to Michelangelo, although they are rough-hewn and rudimentary in design. They are more striking for their sheer size, and this aspect generates the most debate about Coral Castle: How did Leedskalnin move these massive stone blocks?

Surprisingly, no one asks the prior question: How did Leedskalnin *quarry* the blocks from the bedrock? He came from a family of stonemasons and was himself trained in this trade, specializing in carving tombstones (Stavro 2005). Before building Coral Castle, he worked in lumber camps and participated in cattle drives (Coral Castle 2008). Leedskalnin had been sick, but despite the popular belief that he was frail, he had strength and requisite knowledge and skills.

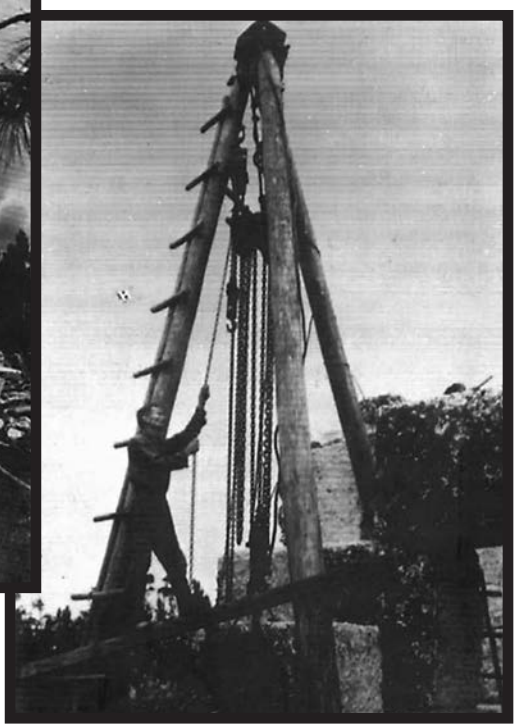
Oolite limestone is a porous, soft sedimentary rock that can be mined with hand tools, known for its relative ease of extraction and suitability for carving (Hoffmeister 1974). Leed-

Karen Stollznow is a linguist, researcher, and writer with a PhD in linguistics. She is the author of the CSI Web column "The Naked Skeptic."

skalnin split the rock using "truck springs sharpened into wedges to break blocks of coral loose from their bed" (Coral Castle 2008). His background in stonemasonry provided him with sculpting experience, which counters claims that he used paranormal powers rather than tools: "In looking at these chairs and other carvings, notice the absence of chisel marks. Notice that the coral does not appear to have been carved" (Coral Castle 2008). However, chisels and hand saws are on display in Leedskalnin's tool shed, and tool marks can be observed on the chairs and other sculptures in the park despite natural erosion. Some speculate that Leedskalnin used magic, not mortar, in his joinery. Conversely, we find he "used cement in joining the blocks because of the hurricanes we have [in Florida]" (Coral Castle 2008).

When asked how he moved the blocks, Leedskalnin would answer cryptically, "I have discovered the secrets of the pyramids." Numerous unorthodox theories attempt to explain this apparent mystery. Echoing theories about Stonehenge, some believe Leedskalnin enlisted the assistance of extraterrestrial beings. Stories variously credit him with superhuman strength, supernatural powers, or secret knowledge. Contradicting claims he was weak, Leedskalnin was allegedly observed "lifting the blocks with his bare hands" (Nimoy 1981). Others believe he employed "Tibetan Monk techniques" of singing to the stones, using these sound waves to somehow lighten their weight in order to lift them (Joseph 1998).

© Leedskalnin 2008



© Leedskalnin 2008

The most popular theory is that Leedskalnin levitated the blocks using telekinesis or magnetic currents. Some claim that "ley lines" exist beneath Coral Castle, producing electrical forces that enabled him to levitate the blocks (Kohler 2009). Some believe Leedskalnin harnessed electromagnetism to reduce the gravitational pull of the earth or that the park is built on a position of harmonic resonance, on a grid that creates anti-gravity allowing the blocks to be levitated (Nimoy 1981). Adapting his theory of Hyperdimensional Physics, Richard Hoagland (of "Face on Mars" infamy) dowsed the premises and concludes that Leedskalnin tapped energy from different planes to levitate the blocks (Hoagland 2004).

The hallmark of urban legend, there are conflicting reports that no one ever witnessed him at work (Coral Castle 2008). This version claims Leedskalnin constructed Coral Castle in secrecy, alone and at night, so no one could watch him work. Allegedly, he had a sixth sense and could tell when people were spying on him, at which point he'd cease working (Nimoy 1981).

Fueling the hearsay, it is true that Leedskalnin worked alone and at night. Therefore, the poor lighting would have made it difficult for anyone to see him working. His reluctance to work during the day can be attributed to Florida's relentless heat and sun. A tour guide insisted that Leedskalnin spent his days reading in a "health chair" that lies over a "sweet spot" on a ley line grid that "spontaneously cured him of tuberculosis" and also "repels arthritis." Sadly, the chair didn't cure him of his chronic tuberculosis or his terminal stomach cancer.

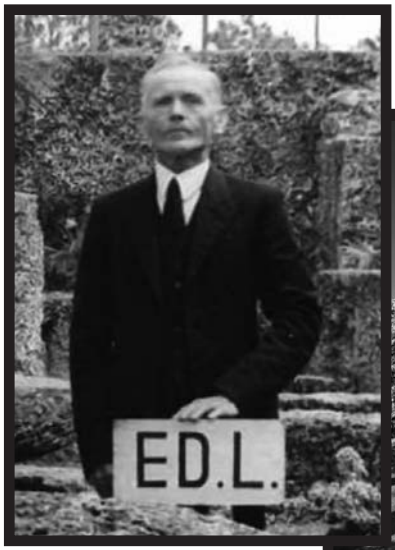
Leedskalnin is portrayed as a paranoid loner. But he had no family nearby, only a nephew in Michigan who eventually inherited the premises. Homestead was, and still is, a remote, low-density township of open agricultural land. Leedskalnin was relatively isolated, and there were only a few distant neighbors who could possibly have observed him at work. The park walls protected his private residence and business. In fact, they weren't erected until 1940, after his move, when most of the sculptures were already built (Coral Castle 2008). In 1934 a group of young men intruded and attacked Leedskalnin; this incident likely prompted his eventual move, and the walls and some lookout points were later added as security measures.

These factors are not to be construed as secrecy, as Rock Gate Park was open to the public. "If you rang the bell twice, and Ed was not busy, he would unlock the gate, and take you on a tour of the Castle" (Coral Castle 2008). This was his livelihood. By 1936 he'd had over 15,000 visitors (Leedskalnin 1936). After he died, his life savings of $3,500 were found on the premises, funds mostly raised by a 10¢ (later 25¢) entrance fee. Rare footage and interviews suggest that Leedskalnin was friendly and welcoming; he enjoyed exhibiting his park to visitors (Nimoy 1981). Perhaps he was more lonely than loner.

Moreover, it doesn't appear his project was covert because

he published his theories and philosophies in a series of pamphlets and public advertisements (Leedskalnin 1946a, 1945b, 1945a, 1945b, 1936). Some of the legends may be attributable to the pseudoscientific ideas he expresses in these writings. For example, the following quote is probably the source of the belief that he had powers of telekinesis and a sixth sense: "Many of you have noticed if you are looking with a concentrated look at someone's back while the person doesn't know it, the person is liable to get restless and look around. I have noticed sometimes that I can chase the mosquitoes away from the wall by only giving a sharp look at them."

Leedskalnin's first publication, *A Book in Every Home* (1936), is a political and moral treatise of draconian values that implies his "Sweet Sixteen" was more an ideal than a reality. *Mineral, Vegetable, and Animal Life* (1945b) and *Magnetic Current* (1945a) discuss his fringe theories about magnetic currents and antigravity and speak of a "perpetual motion holder" that actually works—as long as it's powered by electricity. Leedskalnin's writing is obscure, suggesting that his theoretical knowledge was self-taught and unrefined. Evidently he had practical skills but not a sound understanding of scientific theory.



© Leedskalnin 2008

Photo: Newscom

The literature on Coral Castle is mostly the realm of Web sites, tabloids, travel guides, and paranormal books. Most works are expository rather than explanatory and recycle fallacious research and formulate spurious theories.

Coral Castle buffs ascribe hidden meaning to the premises. The numbers 7129-6105195 are inscribed on the entrance to Leedskalnin's living quarters, and he is misquoted as claiming this is the "secret to the universe." Enthusiasts attempt to decode this number. In an interview on *Coast to Coast AM*, George Noory and author Joe Bullard hypothesize that this number includes "the angle the Great Pyramid is formed on," that it represents the "Golden Ratio," and by isolating "51" we have Leedskalnin's prediction of the year he would die (Noory 2007). A listener called and explained that these numbers appear on Leedskalnin's citizenship certificate (cf. Stavro 2005), but the host and guest refused to accept this simple and factual explanation.

Coral Castle appeared on *Ripley's Believe It Or Not* and *In Search Of* and was featured in *Fate* and *National Enquirer*. The sensationalism is good for business, and the proprietors carefully cultivate the mystique. However, they banned Bullard's book in which he links Coral Castle to a confusing array of phenomena, including Atlantis, the Bermuda Triangle, Stonehenge, UFOs, the Bible, Edgar Cayce, and Adolf Hitler (Bullard 2004). The most recent so-called investigative book concludes uncritically, "The story of how he accomplished these amazing feats remains a mystery" (McClure 2009).

There are very few skeptical treatments of the subject (cf. Dunning 2009; Radford 2006; Stansfield 2006) and no scholarly examinations, despite Coral Castle's claims that the site has been examined by academics. When asked to provide evidence of this research, no representatives could provide references (Radford 2006). This is borne out by my own inquiries. Perhaps the "baffled scientists, engineers, and scholars" are merely uninterested because there are natural explanations for the supernatural claims.

Shows like *In Search Of* are quick to "reconstruct" Leedskalnin levitating the blocks but not so quick to enter his tool shed and reveal real evidence: the rusty cogs, chains, hooks, hoists, pulleys, grinding wheels, winches, and other tools, both homemade and industrial. These extant artifacts are proof that Leedskalnin used simple machines and hard work to build Rock Gate Park.

Leedskalnin was a self-sufficient handyman and hobbyist. He fashioned tools from scrap metal, using his cooker as a hearth for blacksmithing, and built a hand-cranked electrical generator and a radio receiver and transmitter. He utilized natural resources by building a well and used solar power to warm his bathwater. He recycled automobile and bicycle parts and improvised instruments, making a wheelbarrow "from the brake drum of an old truck. Ed used it to move coral" (Coral Castle 2008). The nine-ton gate balances on the axle of a Model T Ford rather than a vortex that supposedly lies beneath.

One source states that when Leedskalnin was asked how he moved the blocks he would respond, "It's easy, if you know how," or, "Ed would say that he understood the laws of weight and leverage" (Coral Castle 2008). These answers are probably closer to the truth. Suspended by chains on a pulley system, Leedskalnin's well, cooker, and the "hanging" bed and chair in his living quarters are clues to the methods he employed. We don't have photographic evidence of Leedskalnin levitating the blocks, but we do have photographic evidence of him raising them using several tripods (although some insist these were staged).

Leedskalnin often posed with his tools and creations for a box Brownie camera. One image shows a sturdy tripod constructed of three wooden poles with steps, the poles connected by a brace. There is a platform around the tripod, and pulleys, chains, and hooks are suspended from the brace. The tripods are not on display; they have probably long since disintegrated, and other tools have been stolen or removed. (The Utah Geological Survey site shows contemporaneous images of oolite limestone quarrying using the same equipment.)

Leedskalnin didn't need forklifts, cranes, and laser drills to build Coral Castle. Modern equipment makes the task easier, although it is not impossible without it. Former construction worker Wally Wallington has demonstrated how one person could replicate Stonehenge using materials and techniques that don't require modern technology (Wallington 2007) or even the technology used by Leedskalnin. Leedskalnin used the mechanical advantage afforded by the levers, pulleys, screws, winches, and wedges that he used to raise and place the blocks—these simple machines and time.

Leedskalnin's relocation provides insight into the time frame required for moving the blocks. Circa 1936 he disassembled Rock Gate Park and relocated to a new site with a quarry in Homestead. Some believe he made a miscalculation and so moved ten miles north where the "telluric forces" were stronger. Occam's razor would have us favor the alternative explanation: Florida City was succumbing to encroaching urbanization and Leedskalnin moved for privacy, especially following the break-in and attack.

There are claims that people saw the carvings being conveyed along the old Dixie Highway, but supposedly "no one saw him load or unload the blocks." In contrast, a witness to the move named Mr. Biggers actually assisted with his tractor (also suggesting that Leedskalnin could have had assistance in building Coral Castle). Still, this was no easy or fast task. For the obelisk alone, "By account of Mr. Biggers, the man who drove the tractor pulling the trailer upon which this rested, it took Ed three days to place it into position" (Coral Castle 2008). This is in contrast to one claim that Leedskalnin raised the entire park overnight using levitation (Nimoy 1981). Furthermore, by 1936 the park had not yet been completed, and the walls weren't even built, so there was less material to transport.

Still, the entire move from Florida City to Homestead took three years (Stansfield 2006). Time is a crucial factor; it took Leedskalnin almost thirty years to build Rock Gate Park. "Ed did not have another job; he devoted his life to building the Castle" (Coral Castle 2008).

How did Leedskalnin build Coral Castle? A sign in his tool shed provides the simple answer: "The most frequent question overheard here is: 'How did one man without assistance construct the coral castle?' The answer is: with an uncanny knowledge of the laws of leverage and balance, engineering and sculpture; and with the aid of simple tools such as metal falls, (block and tackle) rollers, jacks, wedges, slings, cables sledges and chisels. And above all, infinite patience and a tremendous imagination."

In December 1951, Leedskalnin became ill. He put a sign on his front gate, "Going to the Hospital," and took a bus to the Jackson Memorial Hospital in Miami. He died three days later at the age of sixty-four. Some lament that Leedskalnin "took the secrets of Coral Castle to his grave." Instead, it seems he left the evidence behind—reliable historical and eyewitness accounts, equipment, photographs, and Rock Gate Park itself. These provide natural explanations for the paranormal and pseudoscientific claims, regardless of whether or not anyone wants to believe them.

A skeptical explanation doesn't diminish Edward Leedskalnin's remarkable achievements, his poignant story, or the strange beauty of his creation. He was clearly an experienced tradesperson and an amateur inventor, engineer, physicist, and astronomer.

A sign at the entrance to Ed's Place announces, "You will be seeing unusual accomplishment." Coral Castle is a marvel, not a mystery. Supernatural explanations underestimate Edward Leedskalnin's unusual accomplishment. □

References

Bullard, J. 1999. *Waiting for Agnes. Inspired by the True Story of Coral Castle.* Full Moon Press.

Coral Castle Tour Guide. 2008. Coral Castle, Homestead, Florida.

Dunning, B. 2009. Coral Castle. Skeptoid Podcast #149. April, 14, 2009. Available online at http://skeptoid.com/episodes/4149 (accessed May 29, 2009).

Hoagland, R. 2004. Hyperdimensional experiment at Coral Castle. Available online at www.enterprisemission.com/ (accessed October 25, 2008).

Hoffmeister, J. 1974. *Land from the sea: The geologic story of south Florida.* Coral Gables, FL: University of Miami Press.

Joseph, F. 1998. Mysteries of Coral Castle. *Fate Magazine* 51, no. 7 (issue 580).

Kohler, M. 2009. *Coral Castle Explained.* Available online at www.coralcastle-explained.com/ (accessed May 29, 2009).

Leedskalnin, Ed. 1946a. *Magnetic Base*. Homestead, Florida.

———. 1946b. *Magnetic Current*. Reprinted from *Miami Daily News*. Miami, Florida.

———. 1945a. *Magnetic Current*. Homestead, Florida.

———. 1945b. *Mineral, Vegetable and Animal Life*. Homestead, Florida.

———. 1936. *A Book in Every Home*. Homestead, Florida.

McClure, R., and J. Heffron. 2009. *Coral Castle. The Mystery of Ed Leedskalnin and his American Stonehenge*. Ohio: Clerisy Press.

Nimoy, L. 1981. The castle of secrets. *In Search Of.* Alan Landsburg Productions. Episode 16, Season 5.

Noory, G. 2007. *Coast to Coast AM*. Interview with Joe Bullard. Available online at www.youtube.com/watch?v=7enRyRm3GBU (accessed February 10, 2009).

Radford, B. 2006. Mysteries of the Coral Castle. SKEPTICAL INQUIRER 30(3): 25.

Stansfield, W. 2006. The enigma of Coral Castle. *Skeptic Magazine* 12(2).

Stavro, A. 2005. *Koraļļu Pils. Edvarda Liedskalnina Koraļļu Pils Ir Uznemta Amerikas Savienoto Valstu Vesturisko Vietu Nacionalaja Registra*. LA izdevnieciba.

Utah Geological Survey. Available online at http://geology.utah.gov/online/pi-60/pi60st11.htm (accessed June 2, 2009).

Wallington, W.T. 2007. *Forgotten Technology*. Available online at www.the forgottentechnology.com/ (accessed May 30, 2009).

Religious Fundamentalism and Same-Sex Marriage

Americans' attitudes toward same-sex marriage have rapidly changed, defining it now as a civil-rights issue. Nearly all the remaining determined opposition appears to be based on the Bible, ignoring modern scholarly sources.

ANTHONY LAYNG

Until recently, most Americans were convinced that same-sex marriage was a threat to our society. The topic of same-sex marriage (SSM) became an especially hot issue when the rather conservative California Supreme Court concluded that it was unconstitutional to deny marriage licenses to gay and lesbian couples. Since California is so often the leader in social trends in this country, concerned religious leaders and many others strongly condemned this development, hoping to forestall it from spreading to additional states. In the 2008 national election, nearly $40 million was donated to successfully pass California's Proposition 8, which nullified the state supreme court's ruling. (Opponents raised more than $43 million,

making it the most expensive social-issue ballot initiative ever.)

Presently, Massachusetts, Connecticut, Iowa, New Hampshire, and Vermont allow same-sex couples to marry, and New York and Washington, DC, recognize such marriages if legally performed elsewhere. New Hampshire's gay marriage measure was approved by the state senate and signed by its governor in June 2009. On November 3, Maine voters overturned that state's law allowing same-sex marriage. Even so, most attitude polls on this topic make it pretty clear that an increasing number of Americans are finding SSM acceptable. And this is especially so among younger voters. According to a CNN poll released in May 2009, 58 percent of those from eighteen to thirty-four years of age believe that same-sex couples should be allowed to marry. Even older voters, most of whom still oppose SSM, generally favor civil unions for gays and lesbians. So it seems just a matter of time before SSM is allowed in other states.

California was the leader in legalizing interracial marriage in 1948, and it was not until 1967 that the U.S. Supreme court declared laws against interracial marriage unconstitutional. Again, it was the younger voters who led the way as civil-rights activists and others in favor of racial equality. Older Americans who were inclined to hold more conservative social attitudes eventually modified their views on race or died off. The SSM social movement may be taking the same course. Fifty-one percent of California voters now favor SSM, and, again, younger advocates greatly outnumber older ones.

Nearly all of the remaining determined opposition appears to be based on what the Bible says about this subject—or at least what is presumed to be in the Bible. Those who most strongly object to SSM seldom cite the Koran, possibly because it endorses polygyny. The Bhagavad-Gita is also ignored even though both of these sacred texts have nothing good to say about homosexual relationships. Actually, the Bible contains very little information about SSM, only that, "Thou shalt not lie with mankind, as with womankind; it is an abomination" (Leviticus 18:22). The fact that Democrats did so well in the 2008 national election suggests that biblical literalism is losing the political influence it had during the early Bush years.

It is notable and understandable that those who are so adamant against SSM generally ignore modern scholarly sources in defense of their stand. There is, after all, a good deal of information available on this subject that can be verified, unlike Bible verses. For example, there is an increasing amount of scientific evidence that homosexuality is inborn, determined before birth, as is heterosexuality. Also, in countries where SSM is allowed (Canada, the Netherlands, Belgium, Norway, Sweden, South Africa, and Spain), the divorce rate does not correlate with sexual orientation; same-sex marriages are about as enduring as other marriages. However, when gays marry straights, a practice encouraged by stigmatizing homosexuality, those unions tend to be especially fragile.

It is now evident that gays and lesbians who desire to be married do so, in large part, because of economic benefits, the same benefits enjoyed by opposite-sex spouses. And history shows us that same-sex marriages were acceptable under certain economic circumstances in Egypt, China, Greece, Rome, Japan, and Africa. It was the rise of Christianity and Islam that encouraged persecution of homosexuals and denying them civil rights. Under early Christian emperors homosexuality was made illegal, and many of those judged guilty were publicly burned alive.

But why in America today is there lingering opposition to granting marriage licenses to homosexuals, a right that the rest of us take for granted? In addition to the states that have passed constitutional amendments barring recognition of same-sex marriage, nineteen states now exclusively define marriage as a union between one man and one woman. Arizona is the only state to defeat a constitutional amendment limiting marriage to opposite-sex couples. After James Dobson of Focus on the Family complained in 2008 that presidential candidate John McCain was not doing enough to convince his Arizona voters to oppose SSM, McCain immediately began to encourage Californians to ban same-sex unions. Then-candidate Barack Obama supported civil unions, but he and McCain both said they opposed SSM. It is difficult to know how they actually feel about this, but their public pronouncements on this subject did seem to reflect the dominant opinion of American voters at the time.

Nearly all of the remaining determined opposition to same-sex marriage appears to be based on what the Bible says about this subject—or at least what is presumed to be in the Bible.

An increasing number of states are allowing civil unions and domestic partnerships for gays and lesbians. Most Americans, even those who oppose SSM, agree that homosexuals should have nearly all the benefits and protections enjoyed by heterosexuals. So apparently, the economic consequences of marriage have little to do with most of the remaining opposition to SSM. Religious beliefs appear to be the major factors here. And, accordingly, religious-right groups such as Focus on the Family, The Family Research Council, The Traditional Values Coalition, Family Friendly Libraries, and The Christian Coalition continue to vigorously condemn SSM.

The most outspoken opponents, many of them clerics like Dobson, repeatedly insist that SSM threatens traditional marriage, even though there is no objective evidence to verify this claim. Some still insist that homosexuality is "unnatural," but that is too easily challenged now in light of scientific research conducted in the last twenty years. And the old scare tactics of claiming that legalizing same-sex marriages will inevitably lead to

Anthony Layng is emeritus professor of anthropology, at Elmira College. E-mail: tlayng@triad.rr.com.

polygamy, incest, and marriage between people and animals are now less often resorted to since there is absolutely no evidence to support this assertion from countries that allow SSM. Another spurious argument against SSM is the religious right's insistence that churches would be forced to perform such marriages. As the recent Iowa Supreme Court decision striking down that state's ban on SSM states, "A religious denomination can still define marriage as a union between a man and a woman."

By far the most popular strategy consists of quoting the Bible to "prove" that monogamous marriage is a God-given sacred institution. The Bible, an anthology of myths and highly ethnocentric observations by tribal elders, is childishly naive compared to the standards of modern scholarship. The study of ancient cultures makes it clear that marriage became the norm long before religion emerged, and secular marriage is now common in numerous societies. Even in our own society, nearly a third of all marriages occur without any religious endorsement. The belief that marriage is something sacred is supported only by religious faith.

Long before the current social movement to extend the right to marry to homosexuals, there was a long history of gay bashing and ridicule that grew progressively vitriolic. When same-sex couples began to insist that they be allowed to legally marry, a surge of opposition to gay rights emerged, as if granting them the right to marry was "the last straw." And it is in religion where these stalwart opponents found the most convincing justification for their reactionary stand, a rationale that most of us choose not to challenge because it is considered very bad taste to question matters of faith and because the Bible is held in such high regard in this country. At the same time, many other Americans began to view homosexuality more tolerantly. In various circles, especially among the better educated, it became politically incorrect to criticize gays and lesbians for their lifestyle and sexual preferences.

I remember when interracial marriage was condemned by white Southerners as unnatural and offensive to God, and a lot of risqué literature was banned and burned in the name of God. Today, even most religious fundamentalists no longer consider interracial marriage and racy novels a serious threat to society. We may anticipate that more and more biblical literalists and other homophobic Americans will come to realize that granting same-sex couples the right to marry is merely an overdue democratic reform that, even though it offends superstitious and outdated notions, is not a threat to the institution of one man/one woman marriage or anything else worth preserving.

Increasingly, Americans are defining bans on SSM as a civil-rights issue. Changing attitudes are taking us to a not too distant future when political correctness will include acceptance of SSM. Then we will look upon remaining religious opponents as quaintly out of touch with America's commitment to equality and fair play. □

FOLLOW-UP

When Does a Person Become a Human Subject?

MARY M. LIVINGSTON and JEROME J. TOBACYK

Sensitivity to human subjects issues is important and praiseworthy, but there is some confusion regarding the formal definition of human subjects research. In the United States, an Institutional Review Board (IRB) decides whether a study qualifies as human subjects research. The argument that AWARE (AWAreness during REsuscitation study, the topic of "NDE Experiment: Ethical Concerns," SI, September/October 2009) is a violation of Office for Human Research Protections (OHRP) guidelines is contingent upon *when* one becomes a human subject. Consent is not necessary until the person formally becomes a research subject. The federal OHRP regulation specifies:

> (f) *Human subject* means a living individual about whom a researcher obtains (1) Data through intervention or interaction with the individual, or (2) Identifiable *private information. Intervention* includes both physical procedures . . . and manipulations of the subject or the subject's environment that are performed for research purposes. *Interaction* includes communication or interpersonal contact. . . . *Private information* includes information about behavior that occurs in a context in which an individual can reasonably expect that no observation or recording is taking place. . . .[1]

There is clearly no *interaction* of the researcher with the AWARE subject regarding out-of-body experiences (OBE) until the post-recovery interview. There is no *expectation of privacy* in an emergency ward where medical procedures are conducted and observed by multiple onlookers. For example, researchers can collect

Mary Livingston and Jerome Tobacyk are both professors of psychology at Louisiana Tech University in Ruston, Louisiana. Livingston has studied human subjects issues for over twenty years. She can be contacted at maryml@latech.edu. Tobacyk has studied paranormal beliefs and is author of the Paranormal Belief Scale. He can be contacted at jerryt@latech.edu.

observational data without consent from individuals walking in a park because the individuals being observed are not considered human subjects. However, if the researcher *interacts* with (e.g., interviews) the subjects, consent would be needed unless the IRB, in offering approval, either waived consent or waived documentation of consent, in compliance with 46.116c.[1] Thus, from the perspective of an IRB, the patients are not considered human subjects until the interviews are conducted. Therefore, it is not necessary to obtain consent earlier.

The only remaining question is "Does hanging a picture in an emergency room constitute an intervention or manipulation of the environment?" In its discussion of observation, the *Protecting Human Subjects Institutional Review Board Guide Book* uses as an example an artificial "staging of emergencies" where there is the potential for psychological distress.[2] Even in this example, only review by the IRB, which would determine whether the intervention requires prior consent, is required. Placing a picture on the wall (or ceiling) would be much like planting pansies or petunias in the aforementioned park. It is likely the IRB would see this interior decoration change as involving "minimal risk" "not greater than that ordinarily encountered in daily life."[2]

It is fallacious to contend that there is no difference between AWARE's procedures and the procedure of weighing the subject while unconscious, an example that Dieguez uses to argue against the AWARE study. Weighing the subject involves an active intervention that would not otherwise be performed and further might distract from ongoing lifesaving procedures. The contention that "neither does it matter that surviving patients might provide informed consent during recovery" is clearly in error because that is when the first *interaction* occurs and the patient first becomes a research subject. If the patient does not wish to discuss the NDE/OBE, the patient has the right to withhold consent, as is standard in all IRB-approved research. □

Notes

1. Title 45, Public Welfare, Department of Health and Human Services, Part 46, Protection of Human Subjects (Revised June 23, 2005, Effective June 23, 2005). Section 46.102f is very specific in defining a human subject.

2. OPRR 1993, *Protecting Human Subjects Institutional Review Board Guide Book.* Chapter IV: Considerations of Research Design. Available online at www.hhs.gov/ohrp/irb/irb_chapter4.htm.

FOLLOW-UP

Assessing the Credibility of CFI's Credibility Project

GARY P. POSNER

The September/October 2009 SKEPTICAL INQUIRER carried the commentary piece "Can a Reasonable Skeptic Support Climate Change Legislation?" by Stuart Jordan, a senior staff scientist (emeritus) at the NASA Goddard Space Flight Center and science advisor for the Center for Inquiry's Office of Public Policy (OPP) in Washington, DC. The article begins, "Skeptics are rightly challenged to assess claims made by all parties when an issue of major public importance arises. . . . Questions related to global warming . . . represent such an issue today." Dealing more with the political debate surrounding proposed climate-change legislation than with specific scientific facts about global warming, Jordan later notes:

> Both sides have made significant efforts to establish scientific credibility with the public. . . . Those favoring action rely heavily on the IPCC-2007 science report [by the U.N.'s Intergovernmental Panel on Climate Change]. . . . In contrast, [the office of dissenter] James Inhofe…the ranking Republican member of the Senate Committee on Environment and Public Works . . . has issued a . . . report titled United States Senate Minority Report on Global Warming. . . . As of January 2009, the number of . . . individuals identified [in the Report] as scientists who allegedly dissent over [man-made global warming] claims . . . was 687 [including] some quite well-known scientists.

Jordan then discusses the efforts of CFI's OPP to "vet the list [of 687 dissenting scientists] carefully to establish how credible it is overall." Though he doesn't mention its official name in the piece, the OPP dubbed this endeavor the "Credibility Project." And, as Jordan relates, its findings appear devastating for the dissenters.

After thus laying the groundwork for the following ostensible no-brainer, Jordan ends by rhetorically asking "the skeptic who is not acquainted with the relevant science where he or she thinks the most credible scientific assessment lies—with the scientists whose published research is reported in the IPCC-

Gary Posner, MD, founded the Tampa Bay Skeptics (a special interest group of Center for Inquiry/Tampa) and is a CSI scientific consultant. His Web site is www.gpposner.com.

2007 science report or with the much smaller group of scientists collected for the Senate minority report."

Some background: In May 2009, CFI's OPP had disseminated a "Dear Citizen" announcement about its upcoming July 18–21 Second Annual Civic Days at the Nation's Capital (see inset). From its introductory paragraph: "You will hear about . . . an OPP-sponsored project exposing fake 'scientists' who oppose global warming." But two months later, in an invitation to the Credibility Project's July 17 press conference at the National Press Club, the OPP no longer referred to the dissenting scientists as fake. When I inquired as to whether this reflected "an evolution on CFI's part," OPP executive director Toni Van Pelt replied, "It is true, Gary, that your many e-mails [I routinely copy her when corresponding on this subject] influenced my decision to commission this research."

CENTER
FOR
INQUIRY
Office of Public Policy
Washington, D.C.
Promoting Reason and Science in our Nation's Capital
Dear Citizen
Join Us for Our Second Annual Civic Days at the Nation's Capital!
July 18-21, 2009
Come to Washington for three full days of immersion in how Congress and the nation's capital city work. You will hear about what's on Congress's agenda right now; about lobbying works; about The Credibility Project, an OPP-sponsored project exposing fake "scientists" who oppose global warming; visit the National Archives and other historical sites; go on a walking tour of Robert Green Ingersoll's life in Washington; meet and hear from Congressional staffers; and lobby your own members of Congress. And you will also enjoy networking with other Friends of the Center from across the country.
The following is a tentative schedule of events. First lesson of Washington: Congress sets the agenda and we have to follow.

Because I harbor my own doubts about the existence of a man-made global warming crisis, I anxiously awaited the details of the Credibility Project's assessment of the skeptical scientists. Its most significant finding constitutes the deck of Jordan's piece: "CFI vets list of 687 'dissenting scientists' in Senate minority report; 80 percent haven't published peer-reviewed climate research." Largely for this reason, in its July 17 press release, OPP concluded that its findings "expose a lack of credibility among dissenting scientists challenging man-made global warming."

But in my follow-up to Toni, I explained why "it simply does not logically follow that [those skeptical scientists] necessarily lack the credibility to speak to the issues at hand," any more than I lack the legitimacy to critique, for example, medical studies touting prayer and healing, as I have done in CFI-sponsored magazines despite never having published studies of my own in the peer-reviewed literature.

Speaking further to Jordan's key point that "80 percent haven't published peer-reviewed climate research," SKEPTICAL INQUIRER columnist Robert Sheaffer e-mailed a letter to the editor (see page 64), which was copied to other interested parties (including Jordan and myself), pointing out that OPP also should have vetted the list of IPCC scientists, since perhaps as few as 20 percent of them have had any professional dealings with climate, much less published in the peer-reviewed climate literature.

In his e-mailed reply to Sheaffer (et al.), Jordan advises:

> One of the favorite tactics of global warming deniers is to refer to the [IPCC's summary] report for policymakers, which summarizes [their separate] science report [authored by 2,000 real climate scientists]. There [in the summary report] it is true that the majority are not climate scientists, because they are presenting a summary, that is based upon the science report, to government officials, in the language of policy recommendations. Clearly this is comparing apples and oranges. The IPCC-2007 report titled "The Physical Science Basis" is a true science report, written by and summarizing the work of approximately 2,000 real scientists.

However, Sheaffer's letter compares apples to apples—he does not reference the "summary" report, authored by fifty-one members of the IPCC. In an addendum offered after Jordan's initial response, Sheaffer points out that OPP apparently also failed to ascertain how many of the "2,000 real scientists" actually contributed to the writing of the science report (620), and how many of those have published in the relevant literature.

Thus it seems that the Credibility Project, conceived by CFI's Office of Public Policy for the purpose of "exposing fake 'scientists'" who dare dissent from the prevailing climate of climate-change alarmism, has some credibility problems of its own. After polishing the project's clouded lens, as one again examines Jordan's question about whether "the most credible scientific assessment lies . . . with the [IPCC] scientists . . . or with the . . . scientists collected for the Senate minority report," the answer doesn't appear to be such a no-brainer after all. □

Response to 'Assessing the Credibility of CFI's Credibility Project'

STUART JORDAN

This issue presents contributions by Gary Posner (above) and Robert Sheaffer (letters section) critiquing the Credibility Project I helped produce. (See www.centerforinquiry.net/OPP/CredibilityProject.) They suggest that the Senate Minority Report criticized by the Credibility Project is just as valid as *The Intergovernmental Panel on Climate Change (IPCC) Physical Science Report-2007*, and one of them notes, correctly, that the full subtitle of this IPCC report is "The Physical Science Basis." I have several comments on their main points.

The Senate Minority Report was generated with encouragement from a United States senator notorious for making bogus statements to the effect that "global warming is the biggest hoax perpetrated on the American People." That claim is patent nonsense. Global warming over the past three decades is an observationally based scientific fact. Even the current period, cool only relative to the twenty-five-year rise ending in 2005, was *predicted* by the best climate models, which also predict that within a decade—and possibly much sooner—we will experience another sharp global temperature rise. Vetting a questionable report was the motivation for our Credibility Project, and no such motivation existed for us to vet the IPCC-2007 science report.

It still doesn't. We were careful in defining what a climate scientist is, and our definition was rather broad. Whether the same definition was used by the scientist quoted by Sheaffer is not clear, but it is not hard to find a few contrarians willing to define terms to suit their conclusions. As for the number of scientists actually doing climate science, properly defined, even if "only" 620 appear as actual authors of the sections in IPCC-2007 science report, this work is supported by well *over* 2,000 climate scientists whose work in the peer-reviewed literature is referenced in that document.

As for the science itself, recalling that peer-reviewed science is a self-correcting process, not only has the predictive power of global climate science been confirmed, but actual observations of melting icecaps in Greenland and deteriorating conditions in the Arctic paint an even more dire picture than was available in the IPCC-2007 science report, as noted in our Credibility Project. In contrast, no scientific results based on observations have emerged to challenge the large consensus of the climate science community. Those who invoke the solar cycle, to which there is no global temperature correlation even if one allows for phase shifts, or who cite possible increases in solar flux, of which observations show none over this warming epoch, are especially off the mark. Yet many contrarians continue to propose the Sun as the dominant driver of global warming, possibly for lack of other hypotheses.

What about the cautious nature of the stated conclusions in our Credibility Project? We leave it to the reader to decide if we are pursuing "an agenda." Consider our penultimate sentence, in which we make it clear that we are restricting ourselves to what we know best—the science: "The authors of this Credibility Project are not qualified to assess the engineering and economic questions associated with proposed legislation addressing climate change."

At this point, it may be best to move the debate into the halls of Congress, where there is a huge scientific community prepared to defend the legitimacy of climate science against the small number of scientific claims to the contrary. I have had a civil exchange with one of the above critics of our project and think both Sheaffer and Posner are sincere in their skepticism. I also commend the SKEPTICAL INQUIRER for presenting both sides of this issue while reminding the reader that this does not imply equal weight to all positions when science is involved. Following the above quote from our conclusion is our final, summary statement on the Credibility Project: "We are disturbed by any document that may misrepresent the state of the global scientific effort to address this problem."

We stand by that statement. □

I also commend the SKEPTICAL INQUIRER for presenting both sides of this issue while reminding the reader that this does not imply equal weight to all positions when science is involved.

Stuart Jordan is science advisor for the Center for Inquiry/Office of Public Policy in Washington, DC.

'Noetic Science' in *The Lost Symbol*

JOE NICKELL

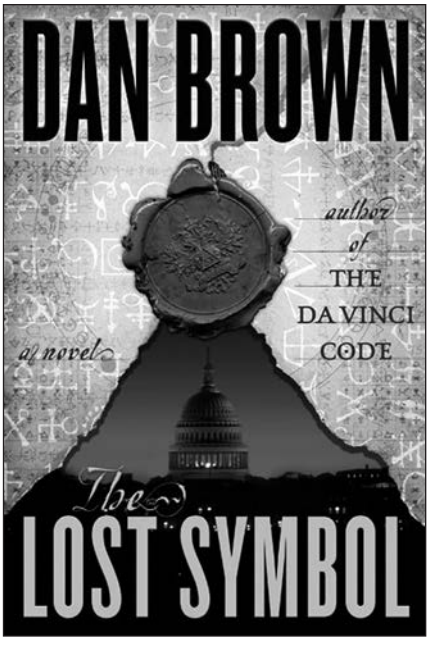
The Lost Symbol. By Dan Brown, Doubleday, New York, 2009. ISBN: 978-0-385-50422-5. Hardcover, $29.95.

Dan Brown has done it again. He's produced another page-turning, thrill-a-minute novel, offering up more pseudohistory and pseudoscience in the process.

Just like his earlier *The Da Vinci Code* (2003), *The Lost Symbol* (2009) begins with a gruesome discovery in a public gallery and proceeds—by solving devilishly cryptic puzzles, analyzing artworks, and uncovering lost histories—on a quest for a fabled treasure, while the hero and heroine are dogged by both a freakish, maniacal killer and equally relentless authorities. To borrow from Yogi Berra, "It's déjà vu all over again!"

Brown claimed portions of *The Da Vinci Code* were based on fact. In particular, he asserted that a secret society called the Priory of Sion was "a real organization" founded in 1099 and that parchments that surfaced in 1975 listed among its noted members Leonardo da Vinci. Actually, *Les Dossiers Secrets* were proven to have been part of a hoax, one that snookered the authors of two popular pseudohistories, *Holy Blood, Holy Grail* and *The Templar Revelation*. Brown's reliance on such sources earned him deserved chastisement from Da Vinci scholars (see "Deciphering Da Vinci's *Real* Codes" [Nickell 2007]).

Joe Nickell, PhD, is CSI's senior research fellow. Formerly a detective with an international private investigative agency, he is author of such books as Crime Science *and* Unsolved History. *His Web site is www.joenickell.com.*



Now, *The Lost Symbol*—featuring a quest for the hidden secrets of the ancients, namely the veiled truths of the Freemasons, and set in Washington, DC—takes a leap of faith into something called "Noetic Science." *Time* magazine called it "an ill-advised fling" (Grossman 2009). What is Noetic Science? Well, it has more to do with *noetic* (after a Greek word suggesting "inner knowing") than with science.

The concept, advanced by the Institute of Noetic Sciences (IONS) in Northern California, supposedly involves "the rigor of science" but is "balanced by personal and collective wisdom" in order "to support a shift in consciousness that transforms present global conditions into a world grounded in freedom, wisdom, and love" (according to the IONS Web site [Institute 2009]). In addition to hosting retreats and workshops, IONS "explores the frontiers of consciousness" and "researches subtle energies and the power of healing," among other things.

Its vision stems from an "epiphany" that astronaut Edgar Mitchell had in 1971 when, on the Apollo 14 Moon mission, he saw planet Earth suspended in space. According to Mitchell, "The presence of divinity became almost palpable, and I knew that life in the universe was not just an accident based on random processes. . . . The knowledge came to me directly" (Institute 2009).

In fact, Mitchell was already involved in the paranormal, conducting his own private unauthorized ESP experiment during the Apollo 14 mission. Although he touted the results at odds of about 3,000 to one, it was only by citing a "negative ESP effect," as he termed it (Mitchell 1974, 34), "because the number of hits was amazingly low"! Undeterred, Mitchell also came to believe that plants could perceive and comprehend human thoughts and that spoon-bending magician Uri Geller had genuine psychic and psychokinetic powers (Randi 1995, 203–204).

Mitchell is a repeat conspiracy theorist, claiming that the reality of UFOs, the crash of a flying saucer at Roswell, and the study of recovered alien corpses have all been subjected to government "disinformation" to hide the truth from the public. His organization, IONS, suggests he has found reality more complex than "conventional science had led him to believe" (Institute 2009). How-

ever, to many, he must seem out of touch with reality. For example, he now claims to have been remotely cured of kidney cancer (which was never definitively diagnosed), effected by a teenager calling himself Adam Dreamcatcher ("Edgar Mitchell" 2009).

Among Mitchell's like-minded colleagues at IONS is its head scientist, Dean Radin, who has also endorsed such dubious phenomena as psychokinetic spoon bending (which he himself claims once to have accomplished), as well as "remote viewing" and other forms of ESP, healing thoughts (even those sent back in time), yogic levitation, and an "intention" effect (the idea that food can be mentally "embedded" with positive intentions). Radin claimed a test he conducted showed that subjects who ate a product called Intentional Chocolate greatly improved their mood. Said Radin: "If the Pope blessed the water, everyone wants that water. But does it actually do something? The answer is yes, to a small extent" ("Dean Radin" 2009; Spoon bending evidence by Dean Radin 2009; Kornfeld 2009).

Radin's paranormal claims have not been accepted by mainstream science and, indeed, his work has been faulted by scientific critics (e.g., Good 1997). According to *The Skeptic's Dictionary* (Carroll 2009), "Radin distorts the history of psi research, omitting the seedy side of the story, and abuses statistics to make his case for the paranormal. He repeatedly shouts out the incredible odds against chance of getting some result in an experiment that allegedly demonstrates telepathy, precognition, or psychokinesis, yet he still can't find a single person in any of these experiments who is even aware of a psychic ability, much less able to demonstrate one under properly controlled conditions."

Despite repeated discreditations of Noetic Science, Dan Brown's heroine Katherine Solomon concludes that our brains are capable of "superhuman" powers. "Within a matter of years," she asserts, "modern man will be forced to accept what is now unthinkable: our minds can generate energy capable of *transforming* physical matter." Moreover, "God is very real—a mental energy that pervades everything." She adds: "Look to history. Look to the stories of those enlightened minds who performed miraculous feats." In Noetic fashion she proclaims, "I have witnessed people transform cancer cells into healthy cells simply by thinking about them."

Mitchell is a repeat conspiracy theorist, claiming that the reality of UFOs, the crash of a flying saucer at Roswell, and the study of recovered alien corpses have all been subjected to government "disinformation" to hide the truth from the public.

The novel's protagonist, "symbologist" Robert Langdon, is at first doubtful—proving a skeptical foil to Katherine's New Agey assertions. However, she insists: "The idea of *universal consciousness* is no ethereal New Age concept. It's a hard-core scientific reality . . . and harnessing it has the potential to transform our world. This is the underlying discovery of Noetic Science" (pp. 500–504). Langdon begins to reflect on God—expressed in Masonry as "the Great Architect of the Universe" (the "G" in the Masonic emblem)—and he concludes that, historically, "God was the universal constant for man." At the end of the novel, he feels a "powerful upwelling," an emotion he had never felt so profoundly before: "*Hope*."

Dan Brown knows a lot about hope. He knows it sells—or at least a version of it does: the elusive hope that much of the paranormal represents. It is the stuff of fantasies—the belief in the power of the mind alone to effect change, in the ability to glimpse the future, in the survival of death—and Brown knows how to serve it up, neatly packaged and sealed on the cover with an embossed wax signet above gilt lettering, "The Lost Symbol." But may we hope, too, that the truth will prevail? □

References

Brown, Dan. 2003. *The Da Vinci Code*. New York: Doubleday.

———. 2009. *The Lost Symbol*. New York: Doubleday.

Carroll, Robert T. 2009. Review of Dean Radin's *Entangled Minds*. Available online at http://skepdic.com/refuge/entangledreview.html (accessed October 15, 2009).

Dean Radin. 2009. Wikipedia. Available online at http://en.wikipedia.org/wiki/Dean_Radin (accessed October 15, 2009).

Good, I.J. 1997. Where has the billion trillion gone? *Nature* 389 (23 October), 806–807.

Grossman, Lev. 2009. How good is Dan Brown's *The Lost Symbol*? Available online at www.time.com/time/printout/0,8816,1923182,00.html (accessed September 21, 2009).

Institute of Noetic Sciences Home Page. 2009. Available online at www.noetic.org/ (accessed September 15, 2009).

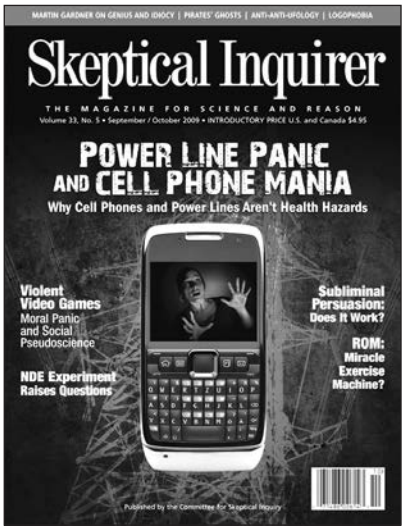
Kornfeld, Alana B. Elias. 2009. Mind over Chocolate. Available online at www.time.com/time/printout/0,8816,1887858,00.html (accessed October 15, 2009).

Mitchell, Edgar D. 1974. *Psychic Exploration: A Challenge for Science*. Ed. John White. New York: G.P. Putnam's Sons.

Nickell, Joe. 2007. Deciphering Da Vinci's *real* codes. SKEPTICAL INQUIRER 31(3)(May/June), 23–25.

Randi, James. 1995. *The Supernatural A-Z: The Truth and the Lies*. London: Brockhampton Press.

Spoon bending evidence by Dean Radin. 2006. Available online at www.mind-energy.net/archives/133-Spoon-bending-evidence-by-Dean-Radin.html (accessed October 15, 2009).


MARTIN GARDNER ON GENIUS AND IDIOCY | PIRATES' GHOSTS | ANTI-ANTI-UFOLOGY | LOGOPHOBIA
Skeptical Inquirer
THE MAGAZINE FOR SCIENCE AND REASON
Volume 33, No. 5 • September / October 2009 • INTRODUCTORY PRICE U.S. and Canada $4.95
POWER LINE PANIC AND CELL PHONE MANIA
Why Cell Phones and Power Lines Aren't Health Hazards
Violent Video Games
Moral Panic and Social Pseudoscience
NDE Experiment Raises Questions
Subliminal Persuasion: Does It Work?
ROM: Miracle Exercise Machine?
Published by the Committee for Skeptical Inquiry

Power Line Panic and Mobile Mania

Thank you again for a very informative issue of SKEPTICAL INQUIRER (September/October 2009). While reading the article by Dr. Lakshmikumar about the lack of interaction between cellular phones and microwave ovens with organic tissue, I noticed (as I am sure many others have) that he is making an error amounting to three orders of magnitude in the frequency (thus energy) of microwave oven radiation. The frequency is much lower, actually 2.45 GHz, and the wavelength of this radiation in air is approximately 12 cm as opposed to 0.1 mm, as can be easily observed by melting butter without a rotating platter, say: maximum heating occurs every 6 cm, i.e., every half wavelength of the radiation. This oversight of course does not invalidate his argument.

Christian Gigault
Assistant Professor, Department of Physics
University of Ottawa
Ottawa, Ontario

In "Power Line Panic and Mobile Mania" there is a rather important error. At first I thought it was just a typo, but instead it is referenced further in calculations and results in a misleading conclusion. Household microwave ovens operate in the Industrial, Scientific, and Medical (ISM) frequency band of 2.4GHz–2.5GHz, which is 2.45×10^{9}, not 2.45×10^{12}, as stated in the article. This can be verified for any microwave by simply opening the door and reading the FCC label. This same error was reproduced in the end of the article when the writer states that the wavelength of a microwave oven is 0.1 mm; rather, the wavelength of a microwave is about 12 cm in free space. A cell phone wavelength is somewhere between 33 cm and 16 cm in free space.

Anthony Valenzano
Electrical Engineer
Archbald, Pennsylvania

The article "Power Line Panic and Mobile Mania" by S.T. Lakshmikumar is quite nice. But there is an important error: the frequency used for a household microwave oven was erroneously specified. The correct frequency is 2.45 GHz (= 2.45×10^{9} Hz) not 2.45×10^{12} Hz. Thus the energy for the photons from the microwave oven is about the same as the energy from photons from the cell phone; they do not differ by a factor of 1,000, as cited in the next sentence.

Gerald Jay Sussman
Professor of Electrical Engineering
Massachusetts Institute of Technology

S.T. Lakshmikumar responds:

An apology. The mistake was typographical. I made one mistake of using $\times 10^{12}$ rather than $\times 10^{9}$. Then I made a second consequential mistake when I calculated the wavelength from the wrong number used earlier. I seriously went through the text to see if changes are required. The passage

> microwave oven is 2.45×10^{12} Hz. Therefore the energy of photons in these sources will be lower by a factor of a thousand for the microwave oven and a million for the mobile hand set.

should have read

> microwave oven is 2.45×10^{9} Hz. Therefore the energy of photons in these sources will be lower by a factor of a billion for the microwave oven and/or the mobile hand set.

And the passage

> The wavelength of a photon in a microwave oven is approximately 0.1 mm.

should have read

> The wavelength of a photon in a microwave oven is approximately 10 cm.

Violent Video Games?

As long-term researchers in the field of psychology of children and the media and subscribers to SKEPTICAL INQUIRER, we are seriously concerned with the article on research concerning violent video games by Christopher Ferguson (SI, September/October 2009). He disagrees with the conclusions of the many experiments that relate children's and teenagers' playing of violent video games to higher levels of aggression, angry thoughts, and lack of helping behaviors. He claims that these studies are essentially fallacious and that the reports by highly respected investigators are pseudoscience.

Since the research has been generally published in the best critical peer-reviewed journals, we do not understand why SKEPTICAL INQUIRER could print this article without a significant rebuttal. Ferguson's own meta-analyses are more cherry-picked than the ones he criticizes that demonstrate the association between aggression and violent video game playing. The author ignores the extensive body of research that supports the social learning theory in psychology initiated by Professor Bandura of Stanford that has proved influential in cognitive, developmental, and personality psychology.

No serious researchers have called for censorship, nor have they made claims that the violence of children in school shootings was solely caused by violent video game playing. There are many factors in a child's life that may evoke aggressive actions, but it appears now that playing specifically and consistently with especially violent games may be a further influence.

Jerome L. Singer and
Dorothy G. Singer
Yale University

I thoroughly enjoyed Ferguson's article, especially his "insider information" on how these studies are performed. As a "hard" scientist (PhD in chemistry) I have always wondered how one could possibly study "violence" in any controlled, objective way: How would "informed consent" work in that case?

The answer, of course, is that researchers don't really study violence, except as after-the-fact anecdotes. (Of course, incarcerated violent criminals, the sharp ones at least, often seize on the latest media darling as self-justification—porn lit, video games, whatever. How reliable is that?)

Violent behavior is, almost by definition, aggressive. However, as Ferguson points out, it is hardly definitive that aggressive behavior is any kind of *predictor* of a propensity for violence. In fact, saying that such a connection is a matter of "open debate" seems overly kind to me.

In some venues—football comes to mind immediately—aggression and violence are certainly correlated, encouraged, in fact. That hardly equates to ordinary day-to-day living.

The inverse relationship between Youth Violence and Video Game Sales (on the chart,

page 40) invites an intriguing hypothesis: Violence-laden video games let young people "blow off steam" (express their frustrations) and make them *less likely* to engage in real-world violence. This may sound weird, but it is every bit as defensible as saying that games *promote* violent acts.

Evan E. Filby, PhD
Idaho Academy of Science
ias_biz@earthlink.net

Christopher J. Ferguson responds:

I thank Dr. Filby and Drs. Singer for their responses. Dr. Filby raises numerous points for constructive dialogue; unfortunately the Singers provide mainly misinformation.

One might be forgiven, reading the Singers' letter, concluding there is consistent research showing harmful effects of VVGs. Yet this simply isn't the case no matter how often some researchers try to make this claim. It is indefensible that some have chosen to ignore data incongruent with their beliefs and falsely communicate consistency to the scientific community. Contrary to the Singers' implication, my meta-analyses (themselves published in highly ranked peer-reviewed journals) include many studies by anti-game advocates. By contrast the "cherry-picked" nature of previous reviews has been noted, not just by me, but by the federal courts of the United States (e.g., ESA, VSDA, and IRMA v. Blagojevich, Madigan, and Devine*, 2005).*

As for censorship, the Singers appear unaware of Gentile, Saleem, and Anderson's (2007) call for journalists to stop citing critics of the anti-game view in what they entitle the "misapplied fairness doctrine." Neither are the Singers apparently aware of the "Cologne Declaration" (2008) signed by numerous German scholars, which calls for a ban on violent games and labels opposing scholars as "collaborators and accomplices" of the VVG industry. Some American scholars simply replace "censorship" with "regulation," but the intent is clearly the same. As to their last comment, in fact, I never stated anti-game scholars claim games are the only *cause of violence. Just because anti-game advocates acknowledge other causes doesn't imply they can't be wrong about video games. I assure the Singers I am well aware of the full range of video-game studies and equally assure the readers of this magazine that they add up to very little, certainly far less than some scholars have irresponsibly claimed.*

NDE Experiment Ethics?

Regarding "NDE Experiment: Ethical Concerns" (SI, September/October 2009): Not only does Dieguez show misunderstandings of Parnia's study, but his ethical objection seems frivolous. 1) Although Dieguez refers to the study as an "experiment," it is not an experiment; it is a field study. 2) Dieguez asserts: "In such an experiment the independent variable is the pre-selected target. . . ." No, the real independent variable is the difference in two kinds of brain states, one of unconscious subjects in cardiac distress and one of "normal" subjects. 3) Involvement of subjects does not begin until they are asked for their informed consent. This occurs after placement of hidden targets, which does not require their consent. To think otherwise is rather silly, in my opinion. 4) Dieguez presents no evidence that the placement of hidden targets or the request for informed consent from patients is harmful to them. 5) Dieguez talks as though the Parnia study is one "on cardiac arrest resuscitation"; it is not. It is an investigation about the brain-mind relationship in human beings. 6) The study, if properly conducted, has a design that enables valid inferences about important hypotheses. In conclusion, the objections by Dieguez to the Parnia study appear totally unfounded. The French and Blackmore critiques following the article were much too tepid.

Gary J. Whittenberger
Tallahassee, Florida

Dieguez argues that suspending a target above a patient being treated for cardiac arrest so that it can't be seen except from an "out of body" point of view, then asking the recovered patient about seeing it in a near death experience (NDE) afterwards, violates rules for medical ethics since informed consent can't be obtained until a conversation with the recovered patient, by which time the patient has already "participated" by having the target in place.

I see no reason to believe that NDE out-of-body experiences and other such parapsychological phenomena are anything other than nonsense, but I believe that Dieguez is stretching ethics rules for informed consent well beyond their intent. Those rules are in place for a reason—to avoid things being "done to" patients that might put them at risk or violate their privacy unless they agree to it. Things that have no effect on their treatment or privacy do not fall within the rules of informed consent, even if there is no benefit to the patient whatsoever. Thus, hospitals can accumulate after-the-fact statistics on numbers of patients treated, admission conditions (how many broken bones, cardiac arrests, kidney stones, etc.), and treatment outcomes and publish analyses of the statistics without specific permission from every patient. Since recording and using these data does not violate patients' privacy or affect their treatment, "informed consent" is not required.

Suspending an invisible target has considerably less effect on the patient and treatment than, say, changing the hospital's interior paint color. Asking the patient about what they may have seen after recovery and giving them the informed choice not to respond or participate at all fulfills any possible need for "protection" from manipulation or privacy violation and thus fulfills any ethical requirement I can imagine.

Joel S. Davis
Albuquerque, New Mexico

I find it difficult to accept Sebastian Dieguez's argument that the proposed NDE experiment is unethical. However, to alleviate his concerns, it is important for the experimenter to provide full disclosure when asking the patient to participate. In the example he provides, it does seem that the experimenter is pulling a bait and switch. In reality, something like the following should suffice: "We are conducting a study into the experiences people have when they are in a deep coma, *including asking about things that some people would consider impossible.* Would you like to participate?"

If the person agrees to participate, he has given informed consent and there is no ethical problem. If the person refuses to participate, it would be quite a leap to say that he has "already been involved in a parapsychological experiment without his consent." According to Dieguez's basic assumptions, the mere prior placement of the hidden targets *cannot have had any affect on the patient's mental state* (otherwise ESP exists!). Therefore it is not reasonable to think that this act somehow unethically "involves" the patient in an experiment.

Ron Karr
Sunnyvale, California

Sebastian Dieguez suggests in his article on NDEs that the AWARE study is unethical due to the unavailability of consent in cardiac arrest patients. While I appreciate his article, I differ with his conclusion. The main thrust of his argument seems to be that there is no medical benefit expected as a result of this type of research. He fails to discuss the suffering and financial losses that occur in patients who turn to pseudoscience in times of illness (though admittedly not during cardiac arrest). There is also something to be said for providing an answer to a question that provides a major pillar of belief for the religious (I refer the reader to Sam Harris's *End of Faith*).

A scientific examination of OBEs in the setting of NDEs may provide a reasoned response to the question of life after death.

Members of the lay public may not have the level of training and education to appreciate complex arguments regarding neurophysiology and consciousness, relying on anecdotal reports and urban myths. I believe AWARE results may provide a simple skeptical response based on a study that is easy to understand. Dieguez asks how AWARE differs from weighing patients before and after death. Though I am atheist, I assume believers would discount such results citing the weightlessness of a soul. In contrast, OBEs are either genuine or hallucinatory experiences that can be scientifically examined. (I would also be interested to know if similar studies have been performed on meditation, also claimed to produce OBEs, without consent problems.)

Although I am not an investigator for AWARE, as a clinician I would have no problem with participation in such a study, and as a skeptic I will be looking forward to the results of a rational investigation into the life-after-death meme.

Dallas Smith, MD
Emergency Physician
Sherman Oaks, California

(See also the Livingston and Tobacyk Follow-Up column "When Does a Person Become a Human Subject?" in this issue. —ED.)

Disclaimers on Paranormal TV Programs

I was not surprised to read of Wiseman, French, and Watt's failure to find significant effects for disclaimers placed in TV shows that depict the "abilities" of a medium (SI, September/October 2009). I have published several studies on the effects of media depictions on paranormal beliefs, including one experiment that *did find evidence* for the effects of disclaimers (see my article in SI, July/August 1998). However, there were significant differences between the disclaimers that I used and the ones reported by Wiseman, French, and Watt. Their research deliberately focused on the types of disclaimers that actually appear on broadcast TV. As such, these disclaimers are typically presented in small text and carry a message that doesn't disclaim with much force. It might even be argued that several features of the disclaimers used in this research could have encouraged some to *believe even more* in a medium's psychic ability.

For just one example among many that could be selected, if a phenomenon has not yet been subjected to "controlled scientific investigations," as one of their disclaimers stated, some viewers could draw the conclusion that what they've seen is so convincing and unusual that scientists simply haven't had the chance to study it yet. They may be left with the impression that once scientists do study it, they too will find out that mediums really do have great abilities.

While Wiseman, French, and Watt's contribution clearly points out that the typical disclaimers currently in use are weak, their results don't mean that other stronger disclaimers might not affect viewers exactly as they are intended. In my own study, I used disclaimers that were presented both visually (in large readable text) as well as acoustically (viewers heard a male voice-over saying the text as it appeared on screen). One of the effective disclaimers stated that what was being seen was fictitious and presented only for entertainment; another was even stronger and asserted that the depictions violated the known laws of nature and nothing like them had ever actually occurred.

All of this is to suggest that we shouldn't simply conclude that disclaimers have no effect. Their effectiveness may have everything to do with how the disclaimer is presented and exactly how the depicted events are disclaimed. The overriding problem may be to convince broadcasters to take greater interest in including more powerful disclaimers in their programs.

Glenn G. Sparks
Professor of Communication
Purdue University
West Lafayette, Indiana

Christopher French replies:

Glenn Sparks's interesting comments have, of course, hit the nail on the head with respect to where the main problem lies in the use of appropriately worded disclaimers in this context. Makers of paranormal programs are no different from other program-makers insofar as their top priority is viewing figures. They know that such programs will be watched predominantly by believers and that such viewers want to believe that the events portrayed involve real paranormal activity. Therefore they will try to get away with using very weakly worded disclaimers (presented almost subliminally) or even wording that implies the events really are paranormal. It is difficult to see how they could be persuaded to use stronger wording that might result in lower viewing figures.

Climate Change: Science and Politics

I was interested to read Stuart Jordan's commentary, "Can a Reasonable Skeptic Support Climate Change Legislation?" in the September/October issue of the SKEPTICAL INQUIRER. The article's deck reads, "CFI vets list of 687 'dissenting scientists' in Senate minority report; 80 percent haven't published peer-reviewed climate research." I am wondering whether Jordan and CFI likewise vetted the U.N.'s Intergovernmental Panel on Climate Change (IPCC), described as a group of "approximately 2,000 scientists worldwide." If this vetting was not done, why not? Did CFI simply assume that all 2,000 are professional climate researchers who have published peer-reviewed research? Very bad assumption!

Fortunately, this question has been addressed elsewhere. In a recent debate with John Christy, Professor William Schlesinger, a lead author for the IPCC, admitted that only 20 percent of IPCC scientists deal with climate. Schlesinger said, "Something on the order of 20 percent have had some dealing with climate" (see http://tinyurl.com/b5uaqq). In other words, 80 percent of the IPCC membership had absolutely no dealing with the climate as part of their academic studies. Jordan's "knockout punch" was "80 percent [of dissenters] haven't published peer-reviewed climate research." So, these two groups appear to have approximately the same makeup in terms of actual scientists. In fact, the dissenting group appears stronger because their 20 percent is held to a higher standard (peer-reviewed research) versus the IPCC's (had some academic study of climate).

Elsewhere, Jordan has objected that his article specifically refers only to *The Physical Science Basis* (although I do not find that title in his paper). Presumably this is the same as the *Intergovernmental Panel on Climate Change (IPCC) Physical Science Report-2007*, which his paper mentions. However, this does not solve the problem. That document is the product of 620 authors or contributors, a far cry from the claimed "approximately 2,000 scientists worldwide." Furthermore, while many of the contributors are evidently credentialed climate scientists, we do not know for certain that all 620 of them have published at least one climate-related paper in a peer-reviewed journal, the criterion by which the other group is measured. This whole exercise is logically flawed and invalid unless both groups are "vetted" by the same criteria and the results compared.

Robert Sheaffer
Lakeside, California

(See also Gary Posner's Follow-Up column, "Assessing the Credibility of CFI's 'Credibility Project,'" in this issue and Stuart Jordan's response there to Posner and Sheaffer. —ED.)

I do not believe the underlying problem confronting the skeptic considering climate legislation is correctly posed by Stuart Jordan in his well-researched commentary. Science, when based on conclusive and irrefutable evidence, can form the basis for legislative action. Consensus opinion is not, however, science

and should not of itself form the basis for legislative action. Nevertheless, since the potential for harm from global warming from human activity exists and the failure to act could enhance the consequences of such activity, consideration of the issue is still mandated.

Until the scientific theory is proven or disproven, the decision to act or not to act and how to act must at present be based on theoretical possibilities. This political decision making is similar to the decision-making process involved in economic policy and similar government programs. Valid science is unrelated to consensus viewpoint, but its absence does not bar considered thought in the presence of conceivable potential harm through inaction.

Michael L. Ashner
Cove Neck, New York

Logophobia and Reasoning

Regarding "Logophobia" by Massimo Pigliucci (SI, September/October 2009): As Pigliucci informs us, *logophobia*, which translates to the fear of rational thoughts, is not just a joke for skeptics to bandy around. I believe it goes directly to the core of the problem. In my book *Thinking Rationally in an Irrational World* I have used the term *aletheiaphobia*, which translates to fear of the truth—reason, truth, and reality being one and the same.

It is not just the creationists that suffer from this illness; it is a universal problem. Harriet Hall ("Playing by the Rules," SI May/June 2009) states the case for science but fails to be entirely objective. Waiting patiently for all the evidence to come in (otherwise known as letting time be the judge) causes valid ideas to fall into the "yet to be fully understood" basket. What one person sees clearly, others try to bring down. If there is anything personal at stake, our instinctive reaction is to kill the messenger.

Hall also said that it is wrong to put one's ideas before the public expecting to influence science. At a time when doctors lost their licenses for even suggesting vitamin supplements, they took their findings to the public. Those who hadn't gotten help from their doctors benefited immediately and were called health nuts. The symptoms that were not in their doctors' books were the early signs of malnutrition.

Hall uses the example of *Helicobacter* and ulcers to show that science does change its mind; she overlooks the long and wasted time it took to accept the evidence. It is right for science not to act too quickly, but there is no excuse when the evidence is obvious. There is also the need to interpret the evidence correctly; this depends on using our rational mind—we might even say that the need for reasoning caused our prefrontal cortex to evolve.

In my book I show that reasoning does work, and we can know the truth once we understand what a whole truth is. I also give a corrected interpretation of evolution as it applies to human behavior, which I believe will be the ammunition needed to stop the fundamentalist surge. Is anybody interested? Does anybody care? Judging by the strict rules of science, time will be the judge, but do we have that much time?

As Pigliucci concludes, "fighting the spread of logophobia is a primary responsibility of every critically thinking person despite the unfavorable odds, which is why thorough knowledge of the disease and of its symptoms is so crucial." I second that motion.

Joan Morrone
Sebring, Florida

It's easy to win an argument if you set up a straw man to demolish. I think that this is what Massimo Pigliucci has done in his column "Logophobia." He criticizes Michel Foucault and other postmoderns for their stance toward science and thus castigates the whole postmodern movement as antiscience.

However Foucault and the other postmoderns weren't scientists but philosophers, and they were not talking about science but about how science operates in society. Postmodern thought doesn't say there is no truth but that objective truth is very, very hard to achieve because of the difficulty people have in being objective. The scientist does not hold a mirror up to nature but a prism in which what is observed is distorted by one's experience, by cultural assumptions, by a language that is biased, by power relationships, and many other factors.

Does that mean that we should give up in despair and stop looking for truth? Of course not. It simply means that we should be a little more humble and less arrogant in the search.

Myra Jones
mjones672@tampabay.rr.com

Bobby Fischer and Others

While Martin Gardner ("Bobby Fischer: Genius and Idiot," SI, September/October 2009) correctly stated that Sir Arthur Conan Doyle firmly believed in the wee folk, this might have left the mistaken impression that the creator of the rigorous, detached, scientifically minded Sherlock Holmes was himself totally and utterly credulous about the little people. In Doyle's defense and in the name of fairness, it should be noted that in his 1922 book *The Coming of the Fairies* Doyle expressed serious doubts that their "little fairy horses" existed as "mentioned by several writers" for, if so, then "why not dogs?" And he warily concluded, "I have convinced myself that there is overwhelming evidence for the fairies, but I have by no means been able to assure myself of these adjuncts."

Don Nigroni
Glenolden, Pennsylvania

I love your magazine and all it stands for, and I have had a great deal of respect for Martin Gardner for over thirty years; however, his use of the word "idiot" in the title of his column on Bobby Fischer (SI, September/October 2009) was a little harsh. It seems obvious that Fischer suffered from some mental illness, which to me would explain his erratic behavior. The use of the term "idiot" is degrading and unfair, in my opinion.

Grant Ritchey
Kansas City, Missouri

For the Record

A caption to the photo of a young Bobby Fischer (SI, September/October 2009, p. 23) wrongly stated that the famous chess match between Fischer and Boris Spassky took place in Helsinki. The match took place in Reykjavik, Iceland. This was correctly stated in the column itself.

In a display quote and its corresponding text on page 30 of the September/October 2009 issue, a wrong surname was inadvertently substituted for a pronoun. The sentence should read: "Labvin seems not to consider the possibility that he stumbled upon a piece of extraterrestrial jewelry."

The letters column is a forum for views on matters raised in previous issues. **Letters should be no longer than 225 words.** Due to the volume of letters we receive, not all can be published. Send letters as e-mail text (not as attachments) to letters@csicop.org. In the subject line, provide an informative identification, e.g.: "Letter on Jones evolution article." Include your name and address at the end of the letter. You may also mail your letter to the editor to 944 Deer Dr. NE, Albuquerque, NM 87122, or fax it to 505-828-2080.

Check us out on

facebook

We have a Cause and Fan Page:
Cause: **Committee for Skeptical Inquiry / Skeptical Inquirer magazine**
Fan Page: **Skeptical Inquirer**

THE LAST LAUGH

BENJAMIN RADFORD, Editor

ONLINE EXTRA! To see more skeptical humor from The Last Laugh, visit **www.csicop.org/SIExtras.**

HIDDEN MESSAGES by Dave Thomas

The following letters are a simple substitution cipher. If R stands for L, it will do so everywhere. Solution is by trial and error. Hint: Look for patterns in words: for example, the scrambled phrase "JRXJ JRQ" might represent "THAT THE."

PUZZLE

"HYW QGHA TBLHALB ECTGA WS QL FSMMLMM HM GDEHY ZLCYTM AGHY SDB UHFHUCAO AS PDLMACSY HYW AS ILHBY?" —HYY WBDOHY

CLUE: Z = B

ANSWER KEY

As you decipher letters, keep track of them with the handy answer key below. If you've decided that R stands for L, simply write down an "L" above or below the "R" in the alphabetized row below, just as you would for the cipher itself. This builds a handy, easy-to-use reference guide for you and will also reveal the "Super Secret Word," a puzzle within a puzzle!

A B C D E F G H I J K L M N O P Q R S T U V W X Y Z

PREVIOUS PUZZLE SOLUTION: *"FAITH MAY BE DEFINED BRIEFLY AS AN ILLOGICAL BELIEF IN THE OCCURRENCE OF THE IMPROBABLE." —H.L. MENCKEN*

SUPER-SECRET WORD: UNREALITY

Ask The Outlaw Skeptic

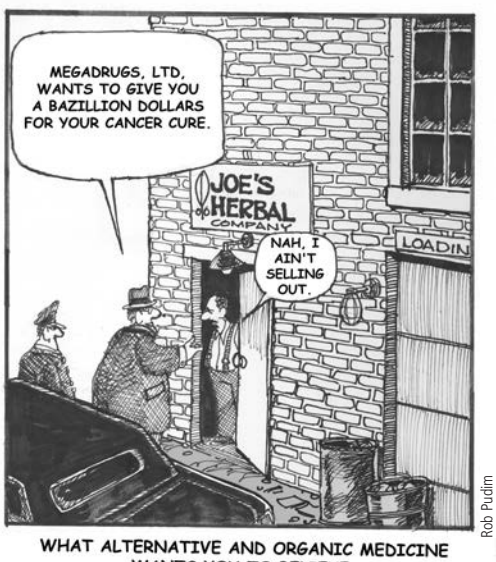
Mr. Outlaw,

What's it called when someone sees an image of an animal in the clouds or a man's face on Mars? I know the term starts with a "P," but there are simply too many p-words in the dictionary to know where to begin. I'm asking because I clearly see an image of the Monkey God in an oily spot on my driveway. Well?

—Puzzled in California

Dear Puzzled,

I think the word you're looking for is "psychotic." Since you live in the U.S., culturally the only religious images you're likely to see in ordinary objects are Jesus, the Virgin Mary, or L. Ron Hubbard, which would actually be described as pareidolia. Your "Monkey God" sighting is a delusion. Although I'm somewhat skeptical about psychiatrists, I suggest you think about seeing one. Then again, in your particular nut-job case, a hypnotherapist might be the better match. You deserve each other.


MEGADRUGS, LTD. WANTS TO GIVE YOU A BAZILLION DOLLARS FOR YOUR CANCER CURE.
JOE'S HERBAL COMPANY
NAH, I AIN'T SELLING OUT.
LOADIN

Rob Pudim

WHAT ALTERNATIVE AND ORGANIC MEDICINE WANTS YOU TO BELIEVE.

© 2009 Reprinted by permission, King Features Syndicate

COMMITTEE FOR SKEPTICAL INQUIRY | SCIENTIFIC AND TECHNICAL CONSULTANTS

Gary Bauslaugh, editor, *Humanist Perspectives*, Victoria, B.C., Canada
Richard E. Berendzen, astronomer, Washington, D.C.
Martin Bridgstock, Senior Lecturer, School of Science, Griffith University, Brisbane, Australia
Richard Busch, magician/mentalist, Pittsburgh, Penn.
Shawn Carlson, Society for Amateur Scientists, East Greenwich, RI
Roger B. Culver, professor of astronomy, Colorado State Univ.
Felix Ares de Blas, professor of computer science, University of Basque, San Sebastian, Spain
Sid Deutsch, engineering consultant, Sarasota, Fla.
J. Dommanget, astronomer, Royale Observatory, Brussels, Belgium
Nahum J. Duker, assistant professor of pathology, Temple University
Taner Edis, Division of Science/Physics Truman State University
Barbara Eisenstadt, psychologist, educator, clinician, East Greenbush, N.Y.
William Evans, professor of communication, Center for Creative Media
Bryan Farha, professor of behavioral studies in education, Oklahoma City Univ.
John F. Fischer, forensic analyst, Orlando, Fla.
Eileen Gambrill, professor of social welfare, University of California at Berkeley
Luis Alfonso Gámez, science journalist, Bilbao, Spain
Sylvio Garattini, director, Mario Negri Pharmacology Institute, Milan, Italy
Laurie Godfrey, anthropologist, University of Massachusetts
Gerald Goldin, mathematician, Rutgers University, New Jersey
Donald Goldsmith, astronomer; president, Interstellar Media
Alan Hale, astronomer, Southwest Institute for Space Research, Alamogordo, New Mexico
Clyde F. Herreid, professor of biology, SUNY, Buffalo
Terence M. Hines, professor of psychology, Pace University, Pleasantville, N.Y.
Michael Hutchinson, author; SKEPTICAL INQUIRER representative, Europe
Philip A. Ianna, assoc. professor of astronomy, Univ. of Virginia
William Jarvis, professor of health promotion and public health, Loma Linda University, School of Public Health
I.W. Kelly, professor of psychology, University of Saskatchewan
Richard H. Lange, M.D., Mohawk Valley Physician Health Plan, Schenectady, N.Y.
Gerald A. Larue, professor of biblical history and archaeology, University of So. California
William M. London, California State University, Los Angeles
Rebecca Long, nuclear engineer, president of Georgia Council Against Health Fraud, Atlanta, Ga.
Thomas R. McDonough, lecturer in engineering, Caltech, and SETI Coordinator of the Planetary Society
James E. McGaha, astronomer, USAF pilot (ret.)
Chris Mooney, journalist, author, Washington correspondent, *SEED* Magazine
Joel A. Moskowitz, director of medical psychiatry, Calabasas Mental Health Services, Los Angeles
Jan Willem Nienhuys, mathematician, Univ. of Eindhoven, the Netherlands
Matthew C. Nisbet, assistant professor, School of Communication, American University
John W. Patterson, professor of materials science and engineering, Iowa State University
Massimo Pigliucci, biologist, philosopher, chairman, department of philosophy, Lehman College of City University of New York
James R. Pomerantz, professor of psychology, Rice University
Gary P. Posner, M.D., Tampa, Fla.
Daisie Radner, professor of philosophy, SUNY, Buffalo
Robert H. Romer, professor of physics, Amherst College
Karl Sabbagh, journalist, Richmond, Surrey, England
Robert J. Samp, assistant professor of education and medicine, University of Wisconsin-Madison
Steven D. Schafersman, asst. professor of geology, Miami Univ., Ohio
Chris Scott, statistician, London, England
Stuart D. Scott, Jr., associate professor of anthropology, SUNY, Buffalo
Erwin M. Segal, professor of psychology, SUNY, Buffalo
Carla Selby, anthropologist/archaeologist
Steven N. Shore, professor and chair, Dept. of Physics and Astronomy, Indiana Univ. South Bend
Waclaw Szybalski, professor, McArdle Laboratory, University of Wisconsin–Madison
Sarah G. Thomason, professor of linguistics, University of Pittsburgh
Tim Trachet, journalist and science writer, honorary chairman of SKEPP, Belgium
David Willey, physics instructor, University of Pittsburgh

United States

ALABAMA. Alabama Skeptics, Alabama. Emory Kimbrough. Tel.: 205-759-2624. 3550 Watermelon Road, Apt. 28A, Northport, AL 35476 US.

ARIZONA. Tucson Skeptics Inc. Tucson, AZ. James McGaha. E-mail: JMCGAHA@PimaCC.Pima.EDU. 5100 N. Sabino Foothills Dr., Tucson, AZ 85715 US. **Phoenix Skeptics**, Phoenix, AZ. Michael Stackpole, P.O. Box 60333, Phoenix, AZ 85082 US.

CALIFORNIA. Sacramento Organization for Rational Thinking (SORT) Sacramento, CA. Ray Spangen-burg, co-founder. Tel.: 916-978-0321; e-mail: kitray@quiknet.com. PO Box 2215, Carmichael, CA 95609-2215 US. www.quiknet.com/~kitray/index1.html. **Bay Area Skeptics** (BAS) San Francisco—Bay Area. Tully McCarroll, Chair. Tel.: 415 927-1548; e-mail: tullyann@pacbell.net. PO Box 2443 Castro Valley, CA 94546-0443 US. www.BASkeptics.org. **Independent Investigations Group (IIG),** Center for Inquiry–*West*, 4773 Hollywood Blvd, Los Angeles, CA 90027 Tel.; 323-666-9797 ext. 159; Web site:www.iigwest.com. **Sacramento Skeptics Society**, Sacramento. Terry Sandbek, President. 4300 Auburn Blvd. Suite 206, Sacramento CA 95841. Tel.: 916 489-1774. E-mail: terry@sandbek.com. **San Diego Association for Rational Inquiry** (SDARI) President: Paul Wenger. Tel.: 858-292-5635. Program/general information 619-421-5844. Web site: www.sdari.org. Postal address: PO Box 623, La Jolla, CA 92038-0623.

COLORADO. The Denver Skeptics Meetup Group. Elaine Gilman, President. Skype address: elaine.gilman. 965 S. Miller Street, 302, Lakewood, CO 80226. Web site: http://skeptics.meetup.com/131/.

CONNECTICUT. New England Skeptical Society (NESS) New England. Steven Novella M.D., President. Tel.: 203-281-6277; e-mail: board@theness.com. 64 Cobblestone Dr., Hamden, CT 06518 US. www.theness.com.

D.C./MARYLAND. National Capital Area Skeptics (NCAS), Maryland, D.C., Virginia. D.W. "Chip" Denman. Tel.: 301-587-3827. e-mail: ncas@ncas.org. PO Box 8428, Silver Spring, MD 20907-8428 US. http://www.ncas.org.

FLORIDA. Tampa Bay Skeptics (TBS) Tampa Bay, Florida. Gary Posner, Executive Director. Tel.: 813-849-7571; e-mail: tbs@cfiflorida.org; 5201 W. Kennedy Blvd., Suite 124, Tampa, FL 33609 US. www.tampabayskeptics.org. **The James Randi Educational Foundation.** James Randi, Director. Tel: (954)467-1112; e-mail jref@randi.org. 201 S.E. 12th St. (E. Davie Blvd.), Fort Lauderdale, FL 33316-1815. Web site: www.randi.org.

ILLINOIS. Rational Examination Association of Lincoln Land (REALL) Illinois. Bob Ladendorf, Chairman. Tel.: 217-546-3475; e-mail: chairman@reall.org. PO Box 20302, Springfield, IL 62708 US. www.reall.org.

KENTUCKY. Kentucky Assn. of Science Educators and Skeptics (KASES) Kentucky. 880 Albany Road, Lexington, KY 40502. Contact Fred Bach at e-mail: fredwbach@yahoo.com; Web site www.kases.org; or (859) 276-3343.

LOUISIANA. Baton Rouge Proponents of Rational Inquiry and Scientific Methods (BR-PRISM) Louisiana. Marge Schroth. Tel.: 225-766-4747. 425 Carriage Way, Baton Rouge, LA 70808 US.

MICHIGAN. Great Lakes Skeptics (GLS) SE Michigan. Lorna J. Simmons, Contact person. Tel.: 734-525-5731; e-mail: Skeptic31@aol.com. 31710 Cowan Road, Apt. 103, Westland, MI 48185-2366 US. **Tri-Cities Skeptics**, Michigan. Gary Peterson. Tel.: 989-964-4491; e-mail: peterson@svsu.edu. Dept. of Psychology, B161, Saginaw Valley State University, University Center,MI 48710.

MINNESOTA. St. Kloud Extraordinary Claim Psychic Teaching Investigating Community (SKEPTIC) St. Cloud, Minnesota. Jerry Mertens. Tel.: 320-255-2138; e-mail: gmertens@stcloudstate.edu. Jerry Mertens, Psychology Department, 720 4th Ave. S, St. Cloud State University, St. Cloud, MN 56301 US.

MISSOURI. Skeptical Society of St. Louis (SSSL) St. Louis, Missouri. Michael Blanford, President. E-mail: info@skepticalstl.org. 2729 Ann Ave., St. Louis, MO 63104 US. www.skepticalstl.org.

NEVADA. Skeptics of Las Vegas, (SOLV) PO Box 531323, Henderson, NV 89053-1323. E-mail: rbanderson@skepticslv.org. Web site: www.skepticslv.org./.

NEW MEXICO. New Mexicans for Science and Reason (NMSR) New Mexico. David E. Thomas, President. Tel.: 505-869-9250; e-mail: nmsrdave@swcp.com. PO Box 1017, Peralta, NM 87042 US. www.nmsr.org.

NEW YORK. New York Area Skeptics (NYASk) metropolitan NY area. Jeff Corey, President. 18 Woodland Street, Huntington, NY 11743, Tel: (631) 427-7262 e-mail: jcorey@liu.edu, Web site: www.nyask.com. **Inquiring Skeptics of Upper New York** (ISUNY) Upper New York. Michael Sofka, 8 Providence St., Albany, NY 12203 US. **Central New York Skeptics** (CNY Skeptics) Syracuse. Lisa Goodlin, President. Tel: (315) 446-3068; e-mail: info@cnyskeptics.org, Web site: cnyskeptics.org 201 Milnor Ave., Syracuse, NY 13224 US.

OHIO. Central Ohioans for Rational Inquiry (CORI) Central Ohio. Charlie Hazlett, President. Tel.: 614-878-2742; e-mail: charlie@hazlett.net. PO Box 282069, Columbus OH 43228 US. **South Shore Skeptics** (SSS) Cleveland and counties. Jim Kutz. Tel.: 440 942-5543; e-mail: jimkutz@earthlink.net. PO Box 5083, Cleveland, OH 44101 US. www.southshoreskeptics.org/. **Association for Rational Thought** (ART) Cincinnati. Roy Auerbach, president. Tel: 513-731-2774, e-mail: raa@cinci.rr.com. PO Box 12896, Cincinnati, OH 45212 US. www.cincinnati skeptics.org.

OREGON. Oregonians for Science and Reason (O4SR) Oregon. Jeanine DeNoma, president. Tel.: (541) 745-5026; e-mail: wilkinsa@peak.org; 39105 Military Rd., Monmouth, OR 97361 US. Web site: www.04SR.org.

PENNSYLVANIA. Philadelphia Association for Critical Thinking (PhACT), much of Pennsylvania. Eric Krieg, President. Tel.: 215-885-2089; e-mail: erickrieg@verizon.net. By mail C/O Ray Haupt 639 W. Ellet St., Philadelphia PA 19119.

TENNESSEE. Rationalists of East Tennessee, East Tennessee. Carl Ledendecker. Tel.: 865-982-8687; e-mail: info@rationalist.org. 2123 Stonybrook Rd., Louisville, TN 37777 US.

TEXAS. North Texas Skeptics (NTS) Dallas/Ft Worth area, John Blanton, Secretary. Tel.: 972-306-3187; e-mail: skeptic@ntskeptics.org. PO Box 111794, Carrollton, TX 75011-1794 US. www.ntskeptics.org.

VIRGINIA. Science & Reason, Hampton Rds., Virginia. Lawrence Weinstein, Old Dominion Univ.-Physics Dept., Norfolk, VA 23529 US.

WASHINGTON. Society for Sensible Explanations, Western Washington. Tad Cook, Secretary. E-mail: K7RA@arrl.net. PO Box 45792, Seattle, WA 98145-0792 US. http://seattleskeptics.org.

PUERTO RICO. Sociedad De Escépticos de Puerto Rico, Luis R. Ramos, President. 2505 Parque Terra Linda, Trujillo Alto, Puerto Rico 00976. Tel: 787-396-2395; e-mail: Lramos@escepticospr.com; Web site: www.escepticor.com.

The organizations listed above have aims similar to those of the Committee for Skeptical Inquiry but are independent and autonomous. Representatives of these organizations cannot speak on behalf of CSI. Please send updates to Barry Karr, P.O. Box 703, Amherst, NY 14226-0703.

International groups listings have been moved to our Web site: www.csicop.org

CENTERS FOR INQUIRY

www.centerforinquiry.net/about/centers

TRANSNATIONAL
3965 Rensch Road, Amherst, NY 14228
Tel.: (716) 636-4869

AUSTIN
PO Box 202164, Austin, TX 78720-2164
Tel.: (512) 919-4115

CHICAGO
PO Box 7951, Chicago, IL 60680-7951
Tel.: (312) 226-0420

INDIANAPOLIS
350 Canal Walk, Suite A, Indianapolis, IN 46202
Tel.: (317) 423-0710

MICHIGAN
3777 49th Street SE, Grand Rapids, MI 49512
Tel.: (616) 698-2342

NEW YORK CITY
80 Broad Street, 5th Floor, New York, NY 10004
Tel.: (212) 504-2945

SAN FRANCISCO
E-mail: sf@centerforinquiry.net

TAMPA
5201 West Kennedy Blvd., Suite 124, Tampa, FL 33609
Tel.: (813) 849-7571

WASHINGTON, DC
621 Pennsylvania Ave. SE, Washington, DC 20003
Tel.: (202) 546-2330

WEST
4773 Hollywood Blvd., Hollywood, CA 90027
Tel.: (323) 666-9797

ARGENTINA
Av. Santa Fe 1145 - 2do piso, (C1059ABF) Buenos Aires, Argentina
Tel.: +54-11-4811-1858

CHINA
China Research Institute for Science Population, NO. 86, Xueyuan Nanlu Haidian Dist., Beijing, 100081 China
Tel.: +86-10-62170515

EGYPT
44 Gol Gamal St., Agouza, Giza, Egypt

FRANCE
Dr. Henri Broch, Universite of Nice, Faculte des Sciences, Parc Valrose, 06108, Nice cedex 2, France
Tel.: +33-492-07-63-12

GERMANY
Kirchgasse 4, 64380 Rossdorf, Germany
Tel.: +49-6154-695023

INDIA
A 60 Journalist colony, JubileeHills, Hyderabad-500033, India
Tel.: +91-40-23540676

KENYA
KCB Building, Jogoo Road, PO Box 52806-00200, Nairobi, Kenya
e-mail: geongere@yahoo.com.

LONDON
Conway Hall, 25 Red Lion Square, London WC1R 4RL, England
E-mail: slalvani@centerforinquiry.net

NEPAL
Humanist Association of Nepal, PO Box 5284, Kathmandu Nepal
Tel.: +977-1-4413-345

NEW ZEALAND
E-mail: bcooke@centerforinquiry.net

NIGERIA
PO Box 25269, Mapo, Ibadan, Oyo State, Nigeria
Tel.: +234-2-2313699

ONTARIO
216 Beverley Street, Toronto, Ontario, M5T 1Z3, Canada
Tel.: (416) 971-5676

PERU
D. Casanova 430, Lima 14 Peru
E-mail: cipsiperu@yahoo.com

POLAND
Lokal Biurowy No.8, 8 Sapiezynska Sr., 00-215, Warsaw, Poland

ROMANIA
Fundatia Centrul pentru Constiinta Critica
Tel.: (40)-(0)744-67-67-94
E-mail: CenterforInquiry.Romania@gmail.com

RUSSIA
Dr. Valerii A. Kuvakin, 119899 Russia, Moscow, Vorobevy Gory, Moscow State University, Philosophy Department

SENEGAL
PO Box 15376, Dakar – Fann, Senegal
Tel.: +221-501-13-00

UGANDA
PO Box 4427, Kampala, Uganda
e-mail: dssekhi@yahoo.com